Public Comments and Responses for the Complete Draft MAHC Code and Annex After the Second 60-day Review Period

Informational Copy: NOT Open for Public Comment

- **Total Comments: 1428**
- **Comments Agreed and/ or Changes Made to MAHC Code and/or Annex: 839 (59%)**
- **Comments without Suggestion or Partially Accepted: 107 (7%)**
- **Comments Disagreed: 482 (34%)**

(1) "Robinson Crusoe," Private Citizen, Hawaii

1 comment

Comment:

General-- Please, do not remove chlorine from our pool water, and put it back into our water, skin diseases are accelerating because of lack of chlorine.. they have REMOVED chlorine from both pool and pipe water in Hawaii, this is showing to be a disastrous mistake in a tropical area, as skin fungal problems and staff, ARE on the increase here, as well as impetigo.

MAHC Committee Response:

Agreed, in the MAHC a primary disinfectant is required for all public pools.

(2) Alvaro Mendoza, Commercial Energy Specialists, Jupiter, FL

16 comments

Comment:

4.1.2.3.5.1-- Bather load calculations that are based on sq ft do not adequately consider the use of the pool, while bather load as a function of GPM has traditionally worked more effectively.

MAHC Committee Response:

Disagree. The bather load calculations are not used for water treatment/filtration purposes (see definition section). Bather load as a function of gpm as suggested seems to be more relevant to water treatment aspects.

Comment:

4.6.2.7.11.1 Annex-- Purge systems (that utilize additional fans) add a significant expense to dehumidification systems and we have operated facilities whereas we equipped the site with a purge system, but have never had to use them.

MAHC Committee Response:

No change requested.

Comment:

4.7.1.7.2.3-- Velocity guidelines for gravity piping should be provided. Some states have experienced good results using 3 ft/s.

MAHC Committee Response:

Partially agree however no change made. Annex states: "Gravity piping must be sufficiently sized to accommodate the recommended flow (including surges) without water surcharging above the INLET. Careful consideration of available head, the head losses, and the combined flow from multiple inputs into a single pipe is a necessity. The 2 feet per second value is a value derived from common practice with no clearly identifiable theoretical basis."

Comment:

4.7.1.8.2.6-- Pumping applications where the pump is located at or above pool grade should be required to be provided with a self-priming pump.

MAHC Committee Response:

Partially agree. However, no change made at this time to include the detail.

Comment:

4.7.2.4.2-- Some codes have found successful application at .375 GPM/sq ft

MAHC Committee Response:

No change proposed by commenter. In response to comment, the Annex contains the following discussion: "Cartridge filter elements should have a listed maximum flow rate of 0.375 gallons per minute per square foot (0.26 L/s/m2), but the design filtration rate for surface-type cartridge filter should not exceed 0.30 gallons per minute per square foot (0.20 L/s/m2).Cartridges don’t recover 100% capacity when cleaned after fouling. Systems designed to the maximum limit cannot sustain performance (or minimum POOL TURNOVER requirements) over time."

Comment:

4.7.3.2.2.2-- Recommend calculating Dosing based on GPM not gallons of pool water. Calculating capacity based on gallons does not adequately consider the use of the pool.

MAHC Committee Response:

Disagree. Chlorine dosage requirements were revised based on public comment submitted in response to the individual module public comment period. A significant change such as this needs additional stakeholder input. A workgroup should be established by the CMAHC to address this issue (chlorine dosage requirements) and bring recommendations for a code change to the 2015 CMAHC conference.

Comment:

4.7.3.2.6.6-- The MAHC code should not require a 100% sizing, as it would reduce the financial viability of the technology. Many successful applications have been installed at less than 100% sizing, and provide 85%-95% of the annual requirements affordably.

MAHC Committee Response:

Partially agree. Code revised, section deleted.

Comment:

4.7.3.3.4.10.1-- MAHC clearly defines requirement for ozone systems to achieve 3-log removal, how about ozone systems that are designed to be supplemental treatment of pool water? Should 4.7.3.3.4.6.3 be included in supplemental systems?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.4.4.2-- Copper silver systems should require periodic testing of both copper and silver levels to assure that they are below federal toxic thresholds

MAHC Committee Response:

Agree. Requirement added to Section 5 Operation and Maintenance.

Comment:

4.9.2.11-- This is confusing. Earlier sections of the code appeared to disallow the use of gaseous chlorine.

MAHC Committee Response:

Agreed. We have added wording to section and elsewhere in MAHC clarifying that it is allowed in existing facilities, if in compliance with requirements, but not in new or substantially altered facilities. (Have added wording in two sections in 4 and in 5.)

Comment:

5.7.1.1.1-- System can be operated at a lesser GPM, than design flow rate, in off peak mode to save energy. Off peak time should start 3 hours after closing as long as it is restored 3 hours before opening.

MAHC Committee Response:

Agreed on principle. See response above. Turn down, not turn off allowed. Wording added to section.

Comment:

5.7.1.9.1-- This is not acceptable. Pools need to be allowed to operate at a lower GPM off peak.

MAHC Committee Response:

Agreed. They are in section 4.7.1.10 and adding new section 5.7.1.1.1.1 (turndown 25%) to clarify.

Comment:

5.7.2.1.4-- Why?

MAHC Committee Response:

Agreed. Section deleted.

Comment:

5.7.2.1.4.2.1-- What is the basis for this? We have operated hi-rate filter systems for 30 years without blowback into the pool.

MAHC Committee Response:

Partially agree. Not incorporated since the MAHC does not think backwashing should be done while bathers are in the venue to prevent chemical mixing accidents. Section deleted.

Comment:

5.7.3.1.3.1.2-- This is too high. Cyanuric acid levels should remain at or below 50 PPM. Recommended range should be 20-30 ppm max.

MAHC Committee Response:

Disagree. There are no data currently guiding what this level should be so the MAHC has gone with generally accepted practice in most codes and WHO recommendation.

Comment:

6.5.3.2.1-- The MAHC fails to distinguish between moderate stabilizer levels (below 20 PPM), and heavily stabilized pool water. If such distinction was made then the overly stringent requirements of this section can be modified.

MAHC Committee Response:

Agree. To date however, no data is available for inactivation of Cryptosporidium and low levels of stabilizer. These data are needed to help inform any future actions. This should be addressed through the CMAHC process.

(3) Andreas Tanzer, ProSlide Technology, Inc, Ottawa Ontario
1 comment

Comment:

4.12.2.10.7.1-- The terminus end of slides entering a common landing pool should be arranged so riders do not come in contact with each other when exiting the flumes of adjacent slides simultaneously. Reference: ASTM F2376-08 Section 8.7.8.2

MAHC Committee Response:

Agree. Code revised.

(4) Andy Hines, Hines Pool and Spa Inc, Austin TX
4 comments

Comment:

5.7.3.1.3.1-- The prohibition of CYA should extend to all outdoor commercial swimming poos due to the well documented science that shows how CYA slows disinfection

MAHC Committee Response:

Disagree. At the current time the decrease in efficacy for most bacteria is not sufficient to totally ban use. The concentration of stabilized chlorine required has been doubled to give that safety factor. More data are needed to understand the impact as stabilizer levels climb in a pool so that stabilizer levels can be re-considered in the MAHC in the future.

Comment:

5.7.3.1.3.1.1-- Listed venues here should include all commercial outdoor swimming pools.

MAHC Committee Response:

Disagree. It is not clear that we can define the risk or difference in risk for common bacterial pathogens between chlorine and stabilized products and the concentration of stabilized chlorine required has been increased. For more tolerant pathogens unstabilized chlorine is less effective as well. We are not considering the role of stabilizer in maintaining a residual in any setting since from a regulatory standpoint, all pools must be treated and no excuses are accepted regardless of disinfectant used.

Comment:

5.7.3.1.3.1.2-- Maximum level of CYA should not exceed 15 PPM. 100 PPM level of CYA slows disinfection so profoundly that the killing of common RWI's will require free chlorine levels in excess of 20 PPM

MAHC Committee Response:

Disagree. There are no data currently guiding what this level should be so the MAHC has gone with generally accepted practice in most codes and WHO recommendation.

Comment:

6.1.2.1.1.5-- CYA slows disinfection. Slower disinfection rates will result in increased levels of otherwise preventable RWI's

MAHC Committee Response:

No response necessary.

(5) Ayana Anderson, ATSDR, Atlanta, GA
11 comments

Comment:

1.2.4-- ATSDR's Hazardous Substances Emergency Events Surveillance (HSEES) reported 400 pool chemical incidents from 2001-2009. Of these incidents, 60% reported injured persons. -- REFERENCE: Anderson AR, Welles WL, Drew J, Orr MF. The distribution and public health consequences of releases of chemicals intended for pool use in 17 states, 2001-2009. Journal of Environmental Health 2014;76:10-15.

MAHC Committee Response:

No suggested change.

Comment:

4.0.1.3 ANNEX-- Phosphate chlorine demand
Phosphate is an oxidized form of phosphorous. Phosphorous is a non-metallic element and an essential nutrient for all living organisms, including bacteria and algae. Phosphate does not create a chlorine demand since the phosphate ion does not react with free chlorine. However, inadequate maintenance and sanitization can allow algae and bacteria to reproduce rapidly by using phosphorous as a nutrient. Under these circumstances, the multiplying algae or bacterial populations will cause chlorine demand. -- Association of Pool & Spa Professionals. American National Standard for Public Swimming Pool, 2012.

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.0.1.3 ANNEX-- Nitrate chlorine demand
Nitrate ion is a nutrient for algae and a number of bacteria. Elevated algae and bacteria populations associated with elevated nitrate ion concentrations create a significant chlorine demand. This leads many to the incorrect conclusion that nitrate ion has a chlorine demand. Nitrate ion is at the highest oxidation state of nitrogen, thus it does not have a chlorine demand. -- Association of Pool & Spa Professionals. American National Standard for Public Swimming Pool, 2012.

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.1.2.3.5.1-- A succinct table for maximum use load (see image below) -- REFERENCE: Association of Pool & Spa Professionals. American National Standard for Public Swimming Pool, 2012.

MAHC Committee Response:

Disagree. Not really applicable in this situation.

Comment:

4.7.1.10.4-- Table for turnover times (see image below) -- REFERENCE: Association of Pool & Spa Professionals. American National Standard for Public Swimming Pool, 2012.

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.7.3-- Improper chemical use can lead to various adverse health outcomes such as respiratory, eye, and skin irritations, gastrointestinal problems, shortness of breath, headaches. -- REFERENCE: Anderson AR, Welles WL, Drew J, Orr MF. The distribution and public health consequences of releases of chemicals intended for pool use in 17 states, 2001-2009. Journal of Environmental Health 2014;76:10-15.

MAHC Committee Response:

No change proposed by commenter.

Comment:

5.4.2 -- According to HSEES data, equipment failure was reported in 22.8% of the events. -- REFERENCE: Anderson AR, Welles WL, Drew J, Orr MF. The distribution and public health consequences of releases of chemicals intended for pool use in 17 states, 2001-2009. Journal of Environmental Health 2014;76:10-15.

MAHC Committee Response:

Agreed. Cited in annex.

Comment:

5.7.4.3.3.2-- HSEES data reported 732 injured persons in 400 pool chemical incidents. Table 4 reports various injuries/symptoms reported -- REFERENCE: Anderson AR, Welles WL, Drew J, Orr MF. The distribution and public health consequences of releases of chemicals intended for pool use in 17 states, 2001-2009. Journal of Environmental Health 2014;76:10-15.

MAHC Committee Response:

Disagree. This paper speaks to injuries, etc. associated with pool chemicals but really does not help in setting a level for combined chlorine.

Comment:

5.9.1.6--In HSEES pool chemical releases 2 contributing factors could be reported. Of the 400 incidents, 221 reported 2 contributing factors. Of the 221 secondary factors, 39.8% were improper mixing. -- REFERENCE: Anderson AR, Welles WL, Drew J, Orr MF. The distribution and public health consequences of releases of chemicals intended for pool use in 17 states, 2001-2009. Journal of Environmental Health 2014;76:10-15.

MAHC Committee Response:

Agreed. Reference cited.

Comment:

6.1.1--According to HSEES data 71.9% of the events involved human error. -- REFERENCE: Anderson AR, Welles WL, Drew J, Orr MF. The distribution and public health consequences of releases of chemicals intended for pool use in 17 states, 2001-2009. Journal of Environmental Health 2014;76:10-15.

MAHC Committee Response:

Agreed. Reference cited.

Comment:

6.1.2.1.4.6--HSEES data differ from NEISS and SENSOR because it is more comprehensive and reports injuries, data from all sectors and includes transportation events. -- REFERENCE: Anderson AR, Welles WL, Drew J, Orr MF. The distribution and public health consequences of releases of chemicals intended for pool use in 17 states, 2001-2009. Journal of Environmental Health 2014;76:10-15.

MAHC Committee Response:

Agreed. Reference cited.

(6) Brian Cole, NASCO, Dickinson, TX
8 comments

Comment:

5.8.5.2.1.2--If I read this correctly, each Aquatic Venue or attraction (which could many attractions that are in close proximity at a major aquatic facility) needs a labeled 911-phone capability or internal EAP phone or system. Can a lifeguard whistle fall under the communication system to activate the EAP? This is not clear. Seems to proscribe a specific remedy (hardwired device with 911 capability) to a situation, rather than suggesting a process (say activating the EAP that includes notifying EMS instead) is in place. Though 585213 says an alternative devices are allowed with regulatory authority approval, what if there is no any regulatory authority involvement or oversight? Then it reverts back to a 911 capable device, right?

MAHC Committee Response:

No change proposed by commenter. Regarding the question about acceptability of a lifeguard whistle to satisfy requirements of this section, no, as stated, the device must be capable of directly dialing 911.

Comment:

5.8.5.4.2--Does this mean all the aluminum pole/shepherds crooks that I see at most aquatic facilities are conductive and fall outside this category, need to be replaced? Or can they be

replaced as they wear out and switched with nonconductive ones? By the way major pool equipment suppliers are selling these and they are not inexpensive.

MAHC Committee Response:

Agree. Code revised to require reaching poles provided after the adoption of the code, to be of non-conductive material.

Comment:

6.2.1.1.2--What is intent of 7) Components of an EAP? Is it numbers 1-6 at a specific attraction? This is unclear. If so, here I see a two-fold issue. First, how can a Lifeguard training organization have in their program an EAP for each individual attraction that has been built or will be built? Second, how can the instructor teach a lifeguard in a specific unique attraction EAP that they themselves may not have access to or knowledge of? For example: a lifeguard candidate takes a lifeguard course at the flat-water pool from an instructor who only knows lap swim type pools, then the lifeguard candidate passes and takes their credentials down the road to a waterpark (where there are diverse attractions). How would that work? To me, sounds like this needs to be moved an area that involves the facility training their lifeguards on their specific attractions that includes a specific EAP for each one.

MAHC Committee Response:

Agreed. Wording edited to clarify. No change proposed by commenter. The intent for inclusion of components of an EAP in this section is not to be facility specific but to address generically, what is typically included in an EAP.

Comment:

6.2.1.2.7--CPR child & adult manikin/cleaning supplies? This may be very cost prohibited for small facilities that train their own lifeguards and can simulate CPR in other methods. What if the lifeguard training organization does not require manikins? Maybe another way rather than proscribe a specific tool (cpr manikin) is to provide a process to simulate CPR. Also, not all aquatic facilities even have an AED, much less an AED trainer. Think about smaller facilities. This would be an enormous cost for them, especially if the fire department or hospital is across the street from the pool.

MAHC Committee Response:

Disagree. A CPR manikin is accepted as necessary equipment to use in teaching CPR. The AED requirement is about a component of an acceptable lifeguard training program, not a facility specific equipment requirement. The MAHC does require AED training to be covered in a lifeguard training course by a Lifeguard Training agency.

Comment:

6.2.1.3.2--They probably have already has some sort of identification process if they have been already hired by the facility operator, then train the lifeguard. However, what if they do

not have a government photo ID? For example they are very young. Also, you can vote in elections in North Carolina without a government photo ID, there are lawsuits here about retaining this ability to vote without one due to racism from Jim Crow times. What if they are an undocumented person? Maybe once again rather than giving a specific remedy that could even lead to potential legal issues consider having a process? Develop a process to identify the individual in the lifeguard course is actually who they say they are.

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.3.1.2--Does this mean they can work an hour guarding, then need to move to dispatch (if they have a slide) or take a 10 minute no guarding activity then start guarding again afterwards? This is not clear. If so though, makes rotations tricky especially if you only have one slide or no slide and many lifeguard guarding positions. Adds a lot of labor expense.

MAHC Committee Response:

No change proposed by commenter. In response to the question, yes, that is correct-they can work an hour guarding, then need to move to dispatch (if they have a slide) or take a 10 minute no guarding activity then start guarding again afterwards.

Comment:

6.3.4.2--Does "Interface with AHJ on requirements of this CODE" mean this is a binding legal requirement of the facility operator to follow? Is this national/federal standard or law. That is the way it sounds. Rather intimidating.

MAHC Committee Response:

No change proposed by commenter. It is not clear what the question is. The section lists some of the responsibilities of the safety team.

Comment:

6.3.4.3.1--In "#2) Rotations can be conducted while all zones are staffed". So the lifeguards that move the rotations around have to be there when you are always open to the public and you are not allowed cannot stagger the staff? Stagger staffing is when the rotator lifeguards come in a little later after opening and leave just before closing. So they are not there during the entire time of operation. This will become a significant amount of additional labor expense (probably with the most impact on businesses that I have seen in this section of code), especially to a very large facility. A large facility may have seven rotations or more; meaning 7 or more staff members. Maybe consider 2) Rotations can be conducted in compliance with 63312 Rotation Procedures. I understand the intent of this code is to help make facilities safer. However, I believe some of these sections may create a burdensome expense. Especially if the facility operator believes this code is required to be followed. This could potentially shut

down their pool(s). On the other side, if they do not follow or know of this code and it is utilized in court against them, it also could shut them down as well. Then the children would not have a place to learn to swim. Choose your words wisely, they are powerful.

MAHC Committee Response:

No change proposed by the commenter. In response to the question," So the lifeguards that move the rotations around have to be there when you are always open to the public and you are not allowed cannot stagger the staff?", the intent is that the minimum number of lifeguards necessary to staff all of the zones of patron surveillance and to conduct rotations per the safety plan must be provided.

(7) Brian Emanuel, Self/FDA, Chicago, IL
1 comment

Comment:

4.7.3.2.7.2--I am not particularly advocating a change but wanted to make someone aware of an issue using CO2 as a chemical to adjust pH. I worked for a local health dept for 30 years inspecting pools and encountered an issue when the Park District used CO2 for controlling pH. What happened was that the CO2 dramatically increased alkalinity so although the pH was in an acceptable range, alkalinity was well over 200PPM.

CO2 + H2O → H2CO3 Carbonic Acid
H2CO3 ↔ H + HCO3- Bicarbonate ion
HCO3- ↔ H + CO32- carbonate ion

I would not recommend using CO2 for pH control when the water has an alkalinity of 100PPM or more.

MAHC Committee Response:

No change proposed by commenter.

(8) Chris Peck, Streamline Aquatics, LLC, Glastonbury, CT
4 comments

Comment:

5.7.3.1.3.1--I would recommend adding splash pads and small pools with spray features

MAHC Committee Response:

Disagree. Splash pads and pools designed for children under 5 years are included in increased risk category so they would have secondary disinfection required under the new MAHC criteria; therefore not necessary to limit use of stabilizers.

Comment:

5.7.3.1.3.1.1--I would like to see these changes made in a 2-3 year time frame

MAHC Committee Response:

Disagree. The Committee picked 4 years to allow owners to prepare for cost of implementation and life of disinfection systems.

Comment:

5.7.3.1.3.1.2--My recommendation would be to have cyanuric acid level between 30 and 50 PPM.

MAHC Committee Response:

Disagree. There are no data currently guiding what this level should be so the MAHC has gone with generally accepted practice in most codes and WHO recommendation.

Comment:

6.2.1.1.1.5--I have been involved with commercial pools for almost 30 years. I can say with confidence that the majority of pool problem nationwide are caused by facility not able to control their pool chemistry. The leading culprit is cyanuric acid. Pools that maintain 20-25 PPM or less run far better than pool using more than 30 PPM. The majority of large commercial pools use chemical controllers to maintain their water chemistry. These products cannot perform accurately or effectively when running at 30 plus ppm of Cyanuric acid. I would also agree with the reports that state that the cost effectiveness of this product over 20 ppm is minimal. I know corporate America would like to sell everyone on levels up to 100 ppm. But this is not in the interest of the industry. I hope that we can use some common sense and limit this section to 50 ppm and hopefully to 30 ppm.

MAHC Committee Response:

Not pertaining to the section number. See discussion under appropriate sections.

(9) Clemente Rivera, Link Automation/Chemtrac Controllers, Ramsey NJ
2 comments

Comment:

4.7.3.2.2.2--All chlorine dosing and generating equipment including erosion feeders, or in line electrolytic and brine/batch generators, shall be designed with a capacity to provide the following:
All pools (indoor/outdoor)(unstabilized): 15lbs of AVCL/day/10,000 gallons of pool water --- As a Controller Manufacturer, I commonly find that the Sizing guidelines are way too undersized for a facility. Asking for facilities to refrain from dosing by hand, then telling them that their feeders need to be WAY lower than their needs prescribe only makes the CPO's job more frustrating.
Controllers need to have enough Pump in their arsenal to MEET BATHER LOAD DEMANDS. In the area of Salt Systems, ESPECIALLY, they will NEVER reach the controller's setpoints, even with supplemental Chlorination set to the same standard.
I implore you to look this over, and consider my suggestion. This sizing is robust, but with a controller present, will deliver the correct doses that the pool needs, when it needs it. Not doing so only perpetuates the issues with DPB's and other environmental issues that are simply rooted by undersized feeders.
Thank you for your time.

MAHC Committee Response:

Disagree. Chlorine dosage requirements were revised based on public comment submitted in response to the individual module public comment period. A significant change such as this needs additional stakeholder input. A workgroup should be established by the CMAHC to address this issue (chlorine dosage requirements) and bring recommendations for a code change to the 2015 CMAHC conference.

Comment:

4.7.3.2.6.6--The Generators shall be capable of providing a chlorine dosage equivalent to the dosing parameters set in section 4.7.3.2.2.2. -- This is a confusing statement, and allows for error by manufacturers, contractors, and installers. The System should be equally sized to a conventional Gas chlorine system under the guidelines set in the previous section.
People are spending a lot of money to go into salt generation, so we should not cheat them by enabling the manufacturers to undersize these very expensive investments.

MAHC Committee Response:

Agree. Section deleted, not needed as all chlorine dosing and generating equipment is already addressed in Section 4.7.3.2.2.2.

(10) Conan Hom, Self, Lexington, MA
1 comment

Comment:

6.3.4.3.5 --Add: Furthermore, (while conducting surveillance) such qualified lifeguards shall not be given secondary duties or expected to carry out secondary duties which may be reasonably calculated to interfere with conducting surveillance. (Rational: If you ever attend Lifeguarding classes, the instructor will invariably usually mention "off the record" how in practice supervisors expect lifeguards to carry out/complete various other secondary duties while conducting surveillance such as checking the pool chemistry, changing lane lines, cleaning, etc., while they are conducting surveillance. Lifeguards are often expected to "wing-it" to complete the tasks without proper backup coverage. The MAHC should stress this issue in this section). REFERENCE: American Red Cross Lifeguarding Manual (2012), p. 44 ("The RID Factor" – see the section on "Intrusion")
ISBN: 978-1-58480-487-1

MAHC Committee Response:

Agree. No change necessary as the concept of secondary duties is addressed in Section 6.3.4.3.4 Direct Surveillance.

(11) Connor Cahil, Berwyn Park District, Berwyn, IL;
(12) Rob Morrison, Coney Island/Jeff Ellis & Associates, Cincinnati, OH
1 comment

Comment:

6.2.1.1.4--Item # 3 refers to land based spinal management. Land based spinal management skills generally require 4-6 hours of instruction in an EMT basic course, and as such suggest EMS personnel are best suited to land spinal management. Consider language for further injury prevention such as "basic stabilization of the patient" or "simple spinal immobilization with no backboarding until EMS arrival"

MAHC Committee Response:

Disagree. OK as written. The statement says "Rescue and emergency care skills to minimize movement of the head, neck and spine until EMS arrives." This is taught in all the current lifeguard training agencies.

(13) Connor Cahil, Berwyn Park District, Berwyn, IL;
(14) Rob Morrison, Coney Island/Jeff Ellis & Associates, Cincinnati, OH;
(15) Joe Stefanyak, Jeff Ellis & Associates, Ocoee, FL
50 comments

Comment:

5.7.6.2--Waterparks and large aquatic facilities may not have a tiled bottom surface for every attraction/venue. "In the absence of a marker tile, an alternate means of achieving the goal of

observation of bottom of pool may be permitted, such as a submersible manikin or shadow doll that shall be placed at the deepest point of the pool/attraction prior to opening the pool." Applicable to both 5.7.6.2.1 & 5.7.6.2.2

MAHC Committee Response:

Agreed. Added wording to code section and annex.

Comment:

5.8.5.2.1.2--Publically accessible phones for emergency communications are neither practical nor effective in a waterpark environment where a communications system that includes 2-way radios and office setting which routes emergency calls. Consider adding a sub entry or additional language such as "AHJ may approve an internal communications process that includes radio use to a central phone to facilitate emergency communications to outside EMS in place of hard wired publicly accessible phones"

MAHC Committee Response:

Agree. The alternate communication section below this covers this circumstance. AHJ can approve use (now section 5.8.5.2.1.3.1.

Comment:

5.8.5.2.1.2--Consider waterpark or larger aquatic facility that has an internal communication system for emergencies, routing 2 way radio calls to a "dispatcher" who then contacts 911. Add sub line "An alternate means of communication may be approved in place of hard wired publicly accessible phone system by the AHJ that may include an internal facility communication process that centralizes 2-way radio communication to a central person for communication to outside EMS."

MAHC Committee Response:

Agree. The alternate communication section below this covers this circumstance. AHJ can approve use (now section 5.8.5.2.1.3.1).

Comment:

5.8.5.2.1.3--Considering adding "...or an internal communications process that includes radio use to a central phone to facilitate emergency communications to outside EMS in place of hard wired publicly accessible phones"

MAHC Committee Response:

Partially agree since this is the intent of this section. Added wording "communication processes" but not all the detail to code. Example has been inserted into annex.

Comment:

5.8.5.2.1.3--Same as above…"An alternate means of communication may be approved in place of hard wired publicly accessible phone system by the AHJ that may include an internal facility communication process that centralizes 2-way radio communication to a central person for communication to outside EMS."

MAHC Committee Response:

Partially agree since this is the intent of this section. Added wording "communication processes" but not all the detail to code. Example has been inserted into annex.

Comment:

5.8.5.2.3.2--This entry also is impractical to larger aquatic venues and waterparks where an internal system is used to communicate

MAHC Committee Response:

Disagree. The sign is posted at the telephone or other communication system that is to be used for dialing 911.

Comment:

5.8.5.2.3.3--This entry is impractical for larger Aquatic venues and water parks as response to emergency is immediate and directly on-site. Consider language such as …"Where an Internal phone system is used the aquatic facility is exempt from posting this information"

MAHC Committee Response:

Disagree. The sign provides patrons with necessary contact information.

Comment:

5.8.5.3.1--This entry is misdirected. It reads that the chair needs to be protected as opposed to the Lifeguard. Consider making this an objective driven concept that applies to all lifeguard positions such as…"Lifeguards must be provided protection from UV radiation by providing that all lifeguards and lifeguard positions are afforded face, eye and upper torso protection" This can be accomplished by providing lifeguard with hat/visor, t-shirt, umbrella at position or any combination that meets the objective.

MAHC Committee Response:

Disagree. If lifeguards are required to sit in chairs, then the superior way to protect them is to build this protection above the chair. The other means of protection are included in the MAHC for roving guards, etc.

Comment:

5.8.5.3.6--What is the point of having a whistle/signal device that is not required to be on the person, as this may be their sole method of communicating an emergency and leaves them vulnerable and potentially alone in responding to an emergency. Change language to reflect requirement to wear whistle/device…"Where QUALIFIED LIFEGUARD is tasked with PATRON SURVEILLANCE, a whistle or other signal device shall be worn at all times while providing surveillance for communicating to users and/or staff."

MAHC Committee Response:

Agreed, edited.

Comment:

5.8.5.3.6--If the whistle or signaling device is not worn then it will never be used prior to a lifeguard entering to pool for an assist or rescue. This places the lifeguard at significant risk without any back up or activation of EAP. Suggest change to…" A whistle or other signaling device shall be WORN for each QUALIFIED LIFEGUARD conducting PATRON surveillance for communicating to users and/or staff". This is the same rational applied to the need to wear the rescue tube.

MAHC Committee Response:

Agreed, edited.

Comment:

5.8.5.3.9--Same general concept as above…if it is not worn on person or attached to the rescue tube the lifeguard will enter the water without it…this is just the fact of emergency reaction. This concept is also why it is a best practice to have multiple wave stops on a wave pool because the rescue guard reacts immediately and almost never hits the e-stop…the reaction to enter the water takes priority. Suggest changing to…" Personal protective devices including a one way valve resuscitation mask and non-latex one-use disposable gloves shall be worn in the form of a hip pack or attached to the rescue tube of all QUALIFIED LIFEGUARDS on-duty"

MAHC Committee Response:

Partially agree; however, no change. The code is written, where possible, to be performance-based instead of prescriptive. The intended outcome (no delay in care) is the same.

Comment:

5.8.5.3.9--Similar to above, what's the point of having PPE that is not on the responder when an emergency occurs. Consider replacing "shall be immediately available" to "shall be worn at all times using a hip pack or rescue tube pack."

MAHC Committee Response:

Partially agree; however, no change. The code is written, where possible, to be performance-based instead of prescriptive. The intended outcome (no delay in care) is the same.

Comment:

5.8.5.4.5--This entry is not clear…The title states *Sign for Conditions when a qualified lifeguard is required.* However the next line speaks to a sign that is required when NO LIFEGUARD is on-duty? So who is this sign for…Self directed patrons? Where is the accountability for enforcement of the rules?

MAHC Committee Response:

Agree. Title of section altered. These are rules for patrons to observe since there is no lifeguard.

Comment:

5.8.5.4.5--Generally, this section is unclear. Refers to sign for when qualified lifeguard is needed, but talks about items when a lifeguard is not needed. Clarify language. Additionally, item #1 gives the facilities that are most at risk for a drowning, hotel and motel pools environments, a free pass from providing more specific safety measures simply by posting a sign.

MAHC Committee Response:

Disagree. This is common code practice to warn patrons of no lifeguard status.

Comment:

5.8.5.4.5--This entry clearly provides an “out” for all hotel/motel/HOA type environments by allowing them to simply post this sign. If one thing is clear these type of aquatic venues are the BIGGEST offenders of aquatic safety and these environments are where drowning occur most often.

MAHC Committee Response:

No suggestion made. This is common code practice to warn patrons of no lifeguard status.

Comment:

6.2.1.1--#3 Lists Cardiopulmonary resuscitation (CPR/AED)…suggest that AED is added as a separate line to clearly delineate that AED training is a required component of Lifeguard Training. Currently it reads as it applies to CPR

MAHC Committee Response:

Agreed. Edited.

Comment:

6.2.1.1.2--Item #6 references extrication with or without assistance. Extrication skills for all agencies require 2 individuals minimum to achieve. Remove “or without assistance”

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.2.1.1.2 #6--#6 (Skills required to extricate a person from the water with or without assistance). There is currently no skill developed or equipment manufactured to allow for a single lifeguard to extricate without assistance. Requiring skills that are not developed and for which there is no study or provision of direction to achieve is irresponsible and risks all current lifeguard training as being viewed as non-compliant.
Suggest that #6 is re-written and remove the works …”or without assistance”.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.2.1.1.4 #3--The addition of “on land” requirement for spinal care (immobilization or back boarding) would require 4-6 additional hours of proper Spinal/Neck/Back training similar to an EMT basic to manage land based spinal care. When in water the main concern is hypothermia, which is not a primary issue for land based neck/back injuries. EMS response is best suited to properly move and backboard a land based spinal case.
Suggest removing all reference to land based spinal OR limit the training to include immobilization of land based spinal and exclude back boarding or transporting.

MAHC Committee Response:

Disagree. OK as written. The statement says "Rescue and emergency care skills to minimize movement of the head, neck and spine until EMS arrives." This is taught in all the current lifeguard training agencies. The statement does specify what methods are to be used "on land" which will be up to the training agency.

Comment:

4.6.5.1--First Aid Rooms should be designed for both equipment *and* treatment, not and/or.

MAHC Committee Response:

Disagree. Annex contains explanation and rationale.

Comment:

6.2.1.2.6.3--Instructors must be held accountable to be able to perform the same skill set of a Lifeguard. IF Instructors are permitted to renew WITHOUT meeting the full lifeguard course requirements THEN by definition they are unable to quality control as called upon in 6.2.1.2.6.4

MAHC Committee Response:

Disagree. There are exceptional instructors in all walks of life who can teach far better than most but cannot do basic skills that they previously could do. Someone else can demonstrate a skill and the instructor can explain it while it is being demonstrated.

Comment:

6.2.1.2.6.4--IF 6.2.1.2.6.3 is not modified then how does this entry hold any water in the court of law? If 6.2.1.2.6.3 is not modified THEN a solution would be to establish a MASTER INSTRUCTOR level (allowance) for Instructors who can no longer perform all lifeguard skills. Allow the MASTER INSTRUCTOR to count against the teaching ratio and continue to perform as an Instructor HOWEVER there must also be a QUALIFIED INSTRUCTOR of record present at all times and who would physically conduct the skills testing to maintain quality control. Otherwise this entry will not achieve quality control.

MAHC Committee Response:

Disagree. The quality control system is to evaluate the ability of the instructor to effectively conduct a course and communicate the materials.

Comment:

6.2.1.2.7 #5--Consider including supplemental oxygen support here in addition to the BVM

MAHC Committee Response:

Disagree. No change at this time. A change such as this needs additional stakeholder input. Recommendations for a code change with supporting documentation should be submitted in advance for consideration at the 2015 CMAHC conference.

Comment:

6.2.1.2.7 #7--#7 calls for AED Trainer required equipment during training HOWEVER AED's are NOT a required content for Lifeguard training does not clearly indicate that AED training must be part of the content. See Above comment…if above comment is changed then disregard this comment.

MAHC Committee Response:

Disagree. Lifeguard Course content includes AED, refer to section 6.2.1.1.3 CPR Skills Cardiopulmonary Resuscitation (CPR/AED) and other resuscitation skills .The Annex contains the following explanation as to why AED's are not required first aid equipment by the code: AEDs were considered to be included in this list, but due to the requirement for medical

direction for AED use by trained rescuers, it was not included as it may not be within the AHJ's authority to mandate such equipment. However, AEDs are widely used and can be used for submersion events and any cardiac incident. If local protocols can be established, it is recommended to have an AED.

Comment:

6.2.1.3.1--IF the Proficiency of a Lifeguard is to be TESTED by a certified Instructor then why is an Instructor not provided with tangible re-qualification skills (same as lifeguard would need to perform) to quality control their ability to TEST Proficiency? If the Instructor cannot perform the skills how can their integrity for TESTING Proficiency be established? Suggest that 6.2.1.2.6.3 be modified as suggested above

MAHC Committee Response:

Disagree. Instructors can still be effective without being able to actually perform skills. Knowledge of the skills and ability to assess someone to a certain level of proficiency does not require an instructor to be able to perform at the level of proficiency.

Comment:

6.2.1.3.3 --This reads as a negative message telling the Instructor it is only important to be present for Practical testing but not written testing or other times during the course. Suggest…"The Instructor(s) of record shall be present at all times during the course hours "

MAHC Committee Response:

Partially agree; however, no change. The proposed change would not allow for the increasing number of online and blended learning content courses. The intent is discussed in the Annex as follows: 6.2.1.3.3 Instructor Physically Present.

Comment:

6.2.1.3.7.2 #1--#1 is impractical and overly burdensome on training agencies and aquatic facilities. Consider a Senior in HS who takes their course in April. Subsequently they are now in college and typically will not return from college until early May. Suggest that a grace period is set up to 45 days to allow renewal as opposed to a New training however lifeguard is not permitted to lifeguard until renewal training is completed. If this moves forward as is this will start to cause labor pool issues since if I were made to take a 30-hour course just because I could not make it to a course that landed exactly under my expiration I may choose to find another job! Think about whom this hurts…the lifeguard and the facility.

MAHC Committee Response:

Agree. Code revised.

Comment:

6.2.1.3.7.2 #6--This line could be clarified. Suggest…"A final practical exam with the Instructor(s) of record present."

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.2.1--This list has been modified from the original draft submitted to the steering Committee and now EXCLUDES or continues to provide an EXCEPTION for HOA pool and Hotel/Motel pools in #2. If this code is going to be taken seriously and is in fact aimed at increasing safety and reducing death due to drowning then this code falls short of its goal and guidance to apply science and data. Data clearly shows that the largest segment of drowning's occur at Hotel/Motel, HOA and currently schools. However, except for the tightened requirements for schools, this entry continues to allow these business types to continue in absence of best practices for swimmer protection.

MAHC Committee Response:

Disagree. Reasons are discussed in the annex. Since location data are not always collected on drowning reports, we are not as clear that there is an abundance of data in the US that identifies the percentage of each public pool type at which drowning's occur. Such peer-reviewed and published data are badly needed. This section does not exempt/except hotel/motel or homeowner association pools from addressing swimmer protection. The criteria specified address conditions that potentially pose a risk to the bathers or to rescuers regardless of the setting. These criteria and available data can be reviewed regularly to re-evaluate and potentially revised the code.

Comment:

6.3.2.1--This goes back to 5.8.5.4.5 that gives hotel and motel pools a free pass by posting a sign for supervising children under 14. Consider rewriting this entire section to get rid of language that enables hotel/motel pools to operate in the absence of any real risk management

MAHC Committee Response:

Disagree. See annex discussion.

Comment:

6.3.2.1--Suggestion for change…#1 Any Aquatic Venue deeper than 4 feet; #2 should be deleted

MAHC Committee Response:

Disagree. Unsupervised children are a known victim of drowning. See annex for discussion on comment #1.

Comment:

6.3.3.2.1--This entry confuses me, as it appears to show that at least one other person is needed for extrication and response by expecting a guard to coordinate the additional responders, however in 6.2.1.1.2 the reference to “extrication without assistance” is made. The language needs to be changed to reflect that emergency response considerations, including additional responders, have been dealt with prior to an actual emergency, rather than setting a single guard up for failure in an emergency. Make the minimum required responders 2 individuals trained in water extrication and CPR care or something along those lines.

MAHC Committee Response:

Disagree. Note that section 6.2.1.1.2 has been revised. The code was revised to the current language based on public comment for the initial module comment period. The code section is written as a performance-based rather than a prescriptive requirement. The Annex contains a discussion regarding this.

Comment:

6.3.3.2.1--It appears this entry previously acknowledged the FACT that a SINGLE LIFEGUARD is not capable (physically, practically and by virtue of the lack of existing skills/equipment to extricate a Victim (especially with a neck/back injury or any larger person other than an infant) out of the pool by themselves.
This current entry now ignores this fact and places said SINGLE Lifeguards and SINGLE Lifeguard Facilities in a legal duty exposure.
The Code tells them to “COORDINATE” but does not require or specify objective that would meet a minimum standard of care and therefore leaving AHJ and facility in a legal exposure.
Suggest language that identifies SINGLE lifeguard Facilities must have a second person immediately available on-site who has been trained in CPR/AED plus Water Extrication skills that are the same as the SINGLE LIFEGUARD
OR Suggest language that requires the Aquatic Supervisor to be on-site at all times and in addition to Supervisory Certification and CPR/AED they have the additional Extrication training.
OR…Suggest language that requires a minimum of 2 lifeguards on staff and immediately available at all time for participation in the EAP.

MAHC Committee Response:

Disagree. The code was revised to the current language based on public comment for the initial module comment period. The code section is written as a performance-based rather than a prescriptive requirement. The Annex contains a discussion regarding this.

Comment:

6.3.3.4.5--This entry is redundant. These skills are part of the Lifeguard Training (6.2.1.3.2) and part of Pre-Service (6.3.3.3 & 6.2.1.3.1) and part of Proficiency (6.3.3.3.4)…this is covered in 3 different areas. Suggest this be deleted…this is a direct reflection of a committee members authorship of a USLA document that is not peer reviewed nor factually supported. Additionally this suggests that a single person can accomplish all aspects when in fact NO SKILL EXISTS today in any lifeguard training for a single guard to be able to extricate a person form the water successfully without submerging the victim's airway below the water.

MAHC Committee Response:

Disagree. Although the skills are contained in the Lifeguard Training and Pre-service sections, this section addresses In-service requirements, so it is not redundant. In response to the comment about the USLC document, it was peer reviewed. Also note that section 6.2.1.1.2 has been revised and there is no requirement that extrication by one person is required.

Comment:

6.3.3.4.5--Additional comment…what is the intent of this entry? If the intend is in fact Competency then the Training, Pre-Service and Proficiency requirements accomplish this. IF this is due to the fact that a Lifeguard certification is 2 years as opposed to 1 THEN this should be the Lifeguard Agencies burden not the facility since it is clear that the Pre-Service, Training and Proficiency entries meet the objective. Who is it directed to and for? It seems to clearly be redundant and simply an entry to placate a committee member

MAHC Committee Response:

No change proposed by commenter. In response to question/comment: The point is to have the skills performed consecutively and not individually as they may be done in some training. If all of these skills cannot be done consecutively, it is difficult to expect a successful rescue. This is not intended to preclude scenario-based activities that accomplish the same.

Comment:

6.3.4.3.1--Considering 6.3.3.2.1 and 6.2.1.1.2, add language in this section that incorporates a requirement for 2 trained staff members to effect extrication and manage an emergency. Add Item #4. A minimum of 2 QUALIFIED LIFEGUARDS, or 1 QUALIFIED LIFEGUARD and additional responder trained in water extrication and CPR care, shall be provided at any AQUATIC FACILITY requiring QUALIFIED LIFEGUARDS, to insure adequate facilitation of Emergency Action Plan execution.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.4.1.2.3.4--Lifeguards are not trained in reaching poles and should never opt to use a reaching device other than a rescue tube. This entry sends a bad message and misinterprets

actual training. Reaching poles are bystander equipment not Lifeguards equipment. Replace reaching Pole with Rescue Tube

MAHC Committee Response:

Agreed, deleted. Section originally included unguarded pools.

Comment:

6.4.1.2.3.4--The word “assist” must be replaced with “rescue”. Assists are way too numerous and inconsequential to record. If a Lifeguard must enter the water and/or abandon swimmer protection to provide rescue skills then this would be a rescue. An Assist is a simple hand to a guest’s elbow or hand to help establish footing or related issue. E&A estimates 10x more assists than rescues and we record over 100K rescues annually. This makes no sense and would play zero positive role in data study.

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.3.4.1--It is our experience, in recording rescue data for 30 years, that guest will NOT provide their names. Remove requirement for patron name as there is no value to collecting names.

MAHC Committee Response:

Disagree. Still need to try in case they need to be contacted.

Comment:

6.4.2.2.4--#1…this is not a one size fits all situation. Why would we want to encourage patrons of a water park or larger aquatic facility to call 911and NOT alert the staff who based upon the MAHC code is prepared, trained and required to manage this process for care and communication. This requirement is detrimental to EMS response and availability community wide.

MAHC Committee Response:

Agreed. Added a few words to clarify that this is about signage to cover intent ("or text complying with the intent of the following information"), NOT exact wording. If a waterpark has another system, number, etc. then the waterpark should modify as needed. This is the reason for having 6.4.2.2.3.1 clarification.

Comment:

6.4.2.2.4--#11…why does this say 12 when to related code for unguarded speaks to under 14yrs of age… 6.3.2.1

MAHC Committee Response:

Agreed. Edited to 14 years.

Comment:

6.4.2.2.4.2--This entry should be applicable to 6.4.2.2.4 and 5.8.5.2.1.2. There is no practical reason to provide 911 call detail on signage at a facility where First Aid is provided on-site and Lifeguards are present

MAHC Committee Response:

Does not say this. See exception 6.4.2.2.3.1. Have added some clarifying language to listing.

Comment:

6.4.2.2.4.3--This entry should be applicable to 6.4.2.2.4 and 5.8.5.2.1.2. There is no practical reason to provide CPR Posters at a facility where First Aid is provided on-site and Lifeguards are present

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.4.4--This entry should be applicable to 6.4.2.2.4 and 5.8.5.2.1.2. There is no practical reason to provide CPR Posters at a facility where First Aid is provided on-site and Lifeguards are present

MAHC Committee Response:

Agreed. Wording edited.

Comment:

6.4.2.2.4.5--This will do nothing to improve safety or sanitation and will only serve to clutter signage and/or create an additional sign at each venue, which in turn will lead to none of them being read by patrons. This entire section (6.4.2.2.4.5) is bad as it relates to multi-venue facilities.

MAHC Committee Response:

Disagree. Users need to be able to access this information.

Comment:

6.4.2.4.3--This entry is redundant to section 6.4.1.2.7

MAHC Committee Response:

Agreed. Deleted.

Comment:

6.6.4.1 #17--Allows AHJ to close pool if overcrowding and/or bather supervision is not adequate. What training do AHJ personnel have that enables them to make this determination? Is there now a created exposure to AHJ or this code in having this entry?

MAHC Committee Response:

Agreed. This could be difficult to enforce. Have substituted new language relating this to theoretical peak occupancy to make it measurable.

Comment:

Glossary--Does the definition of a wavepool apply to wave channels in rivers, or flow rider type attractions? If so this should be included in the definition section.

MAHC Committee Response:

Agree. They do not. Definition has "or surfing" has been deleted and further clarification added.

Comment:

Glossary--Waterslide Definition refers to “catch pool” but glossary does not contain the term “catch pool” but rather “plunge pool”. The term “catch pool” should be changed to “plunge pool” for consistency sake or “plunge pool” definition should be relabeled as “catch pool”.

MAHC Committee Response:

Agreed. Merged definitions for catch pool and eliminated use of plunge pool.

Comment:

Glossary--Substantial Alteration is unfair in its application. It is significantly more financially burdensome for outdoor facilities as it is written than it is for indoor facilities. Why would it need to be different?

MAHC Committee Response:

Partially agree. The MAHC does not think that entirely new venues should be added to a facility without adhering to guidance. This is easily delineated for an outdoor facility vs. an indoor where the building and air systems service the entire area. How could we do this easily for an indoor setting?

(16) Dain Hansen, IAPMO, Washington DC
33 comments

Comment:

4.2.1.1--Construction Material: should read, "AQUATIC VENUES shall be constructed of reinforced concrete or impervious and structurally sound material(s), which provide a smooth, easily cleaned, water tight structure capable of withstanding the anticipated stresses/loads for full and empty conditions, taking into consideration climatic, hydrostatic, seismic, and the integration of the pool with other structural conditions and as required by applicable CODES." -- There are other considerations that need to be referenced in order to understand the dynamics of such construction methods.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.2.1.2--should read, "All materials shall be inert, non-toxic, and resistant to corrosion, impervious, enduring, and resistant to damages related to environmental conditions of the installation region. Where located in areas subject to freezing, pools and appurtenances shall be protected and designed from damage due to freezing.~~(suchas freezing). -- It should be stated that pools and appurtenances must be protected from freezing.~~

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.2.2.1.1--should read, "The interior finish of a NATATORIUM shall be ~~suitable~~ designed for an indoor relative humidity of not less than ~~as highas~~ 80%. -- Using the term as high as would cause confusion and the designer should be able to design more than 80 percent. The interior finish may withstand more than 80 percent and should be up to the designer

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.2.2.3.3--should read, AQUATIC FACILITY AIRHANDLING SYSTEM design, construction, and installation shall comply with the Uniform Swimming Pool, Spa and Hot Tub Code and the Uniform Mechanical Code.~~theASHRAESTANDARD62.1,VentilationforAcceptableIndoorAirQuality,and/orapplicablel~~

~~ocalCODESwithadditional requirements asstated in sectionMAHC 4.6.2. -- ASHRAE 62.1 does not adequately account for the building space of an aquatic facility without taking into account the effect that the number of occupants has on indoor air quality. Table 417.1 is based on bather load density, aquatic venue type, deck areas and spectator areas.~~

MAHC Committee Response:

Disagree. Significant numbers of public comments were received regarding the proposed increase (Table 417.1 in USPSHTC), above ASHRAE 62.1 STANDARDS of required outdoor air. The commenters noted that the requirements will result in increased costs for equipment and operation while lacking adequate data to support the increase. Based on the potential negative impact and the need for additional research and data to differentiate the causes and sources of indoor air quality problems on design criteria (e.g., design, inappropriate operation, inadequate maintenance), the Steering Committee decided to defer to ASHRAE 62.1 outdoor air requirements in this version of the MAHC. 0.48 cfm/ft2 fresh air is consistent with the minimum value of fresh air found in ASHRAE 62.1. The Steering Committee thought it important to preserve the work done by the Technical Committee, so the proposed code language for additional outdoor air has been moved to the Appendix in the MAHC along with preserving the corresponding annex discussion. A MAHC research agenda should be developed and should be a priority to better address the contributing factors to indoor air quality problems and the appropriate design and operational requirements needed to address those factors.

Comment:

4.2.2.3.3.1--should read, “VENTILATION SYSTEM design for chemical STORAGE rooms shall conform to the International Mechanical CODE or Uniform Mechanical CODE, and either the International Fire CODE or the Uniform Fire CODE, and any applicable local CODES.

MAHC Committee Response:

Not clear what change is proposed.

Comment:

4.2.2.3.4-- “Where air ducts are required to be insulated on the inside, the insulation shall be rated moisture and mold resistant. Ducts shall be insulated on the exterior of the duct with a mold-resistant material where the surface temperature of the duct is capable of being less than the airstream temperature within the duct.” -- It is very important that ducts should be insulated on the exterior of the duct with a mold resistant material where the surface temperature is less than the airstream temperature within the duct.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.3.1.1--"~~Accredited Standards Facility~~ Minimum Standards D&C
~~Whereapplicable,allequipmentusedorproposedforuseinAQUATIC FACILITIESgoverned under this CODEshallbe of a provendesign andconstruction andshall belistedbyNSF International, UnderwritersLaboratoriesor another ANSI-accreditedcertificationorganization.~~ Where applicable, equipment, piping, pipe fittings, fixtures, material and devices used in an aquatic facility shall be listed and labeled (third-party certified) by a listing agency (accredited conformity assessment body) and shall comply with the approved applicable recognized standards (developed through a consensus standards development process approved by ANSI). -- There are other testing agencies that provide certified listings and by only referencing two would seem to recommend such agencies instead of many other ISO listed approved agencies. I believe you would want to conform to the referenced standard for equipment etc. and not the listing lab or agency that would test to the standard. Therefore, all products need to be listed and labeled and comply with referenced standards.

MAHC Committee Response:

Agree. Specific names deleted.

Comment:

4.3.1.2--should read, "~~WhereSTANDARDsdonotexist, the designprofessionalshallestablishthatadequatetestinghasbeenperformedtoestablishsuitabilityforuseinAQUATICFACILITIES.~~Where standards do not exist, technical documentation shall be submitted to the Authority Having Jurisdiction to demonstrate equivalency for use in aquatic facilities. The Authority Having Jurisdiction shall have the authority to require tests, as proof of equivalency. -- All AHJ require that where standards do not exist, such documentation must be submitted and approved by the AHJ in order to prove equivalency.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.3.2.1--should read, "~~ANSI-Accredited Testing~~ Listing Agency D&C
Where applicable ,all equipment used or proposed to use in AQUATIC FACILITIES shall be of proven design and construction and shall be listed and labeled by a listing agency accredited by an independent and authoritative conformity assessment body to operate a material and product listing and labeling (certification) system and that is accepted by the Authority Having Jurisdiction. ~~NSF International, Underwriters Laboratories ,or another ANSI accredited certification organization ,or EPA registration where applicable.~~ -- There are other testing agencies that provide certified listings and by only referencing two would seem to recommend such agencies instead of many other ISO listed approved agencies. I believe you would want to conform to the referenced standard for equipment etc. and not the listing lab or agency that would test to the standard. Therefore, all products need to be listed and labeled and comply with referenced standards

MAHC Committee Response:

Agreed. Edited.

Comment:

4.3.2.2—Should read,"RECIRCULATION SYSTEMS and all materials used therein shall be suitable for their intended use and be installed in accordance with this CODE, where used in accordance with the limitations imposed in this code and their listing. ~~as certified by an ANSI-Accredited third-party testing and certification organization, and as specified by the manufacturer. -- Suitability for use is based on code requirements and their terms of the listing. The third party testing agency does not test for their suitability for use.~~

MAHC Committee Response:

Disagree. However, code revised to update/clarify terminology.

Comment:

4.5.14.2--should read, "A hydrostatic relief valve ~~and/or suitable under drain system~~ shall be provided where the water table exerts hydrostatic pressure to uplift the pool when empty or drained. ~~when site conditions warrant." -- What are the site conditions that would warrant this section? The user should know when to use a hydrostatic relief valve. In addition, what is a suitable under drain system? How would one know that it is a suitable under drain system?~~

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.5.17.2--should read, "The leading horizontal and vertical edges of UNDERWATER BENCHES shall be outlined with slip-resistant color contrasting tile or other permanent marking of not less than ~~3/4~~1inch(19.05 mm) and not greater than2inches(50mm). Correlates with Section 4.5.18. -- The average marking is 1 inch from the Uniform Swimming Pool, Spa and Hot Tub Code and APSP.

MAHC Committee Response:

Disagree. Getting uniformity at 3/4 inch will bring uniformity to multiple codes.

Comment:

4.6.1.3.1--should read, "POOL water surface and DECK light levels shall meet the following minimum maintained light levels*:

1) Indoor Water Surface -30 horizontal foot candles(320 lux)

2) Outdoor Water Surface - 10horizontal foot candles(1080 lux)
3) DECK- 10 horizontal foot candles(1080 lux)

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.1.7.2--should read, "In no case shall the path of egress be illuminated to less than a maintained value of0.5~~6~~footcandles(~~6~~5.4lux)." -- The average consensus is 0.5 footcandles from the Uniform Swimming Pool, Spa and Hot Tub Code and APSP.

MAHC Committee Response:

Agree. Code revised. ***Note, Annex indicates 0.5 foot candles.

Comment:

4.6.2.4--should read, "INDOOR AQUATIC FACILITY AIR HANDLING SYSTEM design, construction, and installation shall comply with the Uniform Mechanical Code. ~~applicable local CODES." -- Mechanical codes provide the design, construction and installation of an air handling system.~~

MAHC Committee Response:

Disagree. It is not the intent of this CODE to mandate compliance with the Uniform Mechanical Code unless it has been adopted by a local jurisdiction.

Comment:

4.6.2.5--Should read, "~~ASHRAE62.1~~Ventilation The ventilation of an INDOOR AQUATIC FACILITY ~~AIR HANDLINGSYSTEM design, construction, and installation~~ shall comply with the 2015 Uniform Swimming Pool, Spa, and Hot Tub Code ~~ASHRAE standard 62.1 2013,Ventilation for Acceptable Indoor Air Quality, and/or applicable loca lCODES~~ with additional requirements as stated in sectionMAHCSection4.6.2.6.

MAHC Committee Response:

Disagree. The intent is to require compliance with the ASHRAE Standard.

Comment:

4.6.2.6.5--Should read, "AIRHANDLING SYSTEM design may include natural ventilation calculated in accordance with the Uniform Mechanical Code ~~ASHRAE Handbooks~~ to substitute the corresponding portion of mechanical ventilation only if all the calculated exterior openings will be continuously controlled open during all times the INDOOR AQUATIC FACILITY is occupied, regardless of season." -- Ashrae Handbook is a guide and discusses various

systems and the equipment they comprise. This handbook describes features and differences including guidance on costs and does not cover this specific application

MAHC Committee Response:

Disagree.

Comment:

4.6.2.7.1--should read, "The AIR HANDLING SYSTEM shall have a design capability to supply the minimum outdoor air requirements in accordance with Section 4.6.2.5.~~usingASHRAEstandard 62.12013,Ventilation for Acceptable Indoor Air Quality."~~

MAHC Committee Response:

Disagree.

Comment:

4.6.2.7.11.1--should read, "The AIR HANDLING SYSTEM shall have a PURGE capacity equal or greater than 2 times the ~~ASHRAE~~ Uniform Mechanical CODE level. This PURGE would be activated manually and run for a time that achieved one complete air turn of the space." -- The Uniform Mechanical Code provides for this requirement. Indicating ASHRAE code level from which document? Unable to locate where this came from.

MAHC Committee Response:

Disagree.

Comment:

4.6.2.7.4--should read, "The AIR HANDLING SYSTEM shall supply an air delivery rate as defined in the 2015 Uniform Swimming Pool, Spa, and Hot Tub Code, Outdoor Air Requirements .~~ASHRAE Handbook – HVAC Applications 2011,Places of Assembly, Natatoriums."~~

MAHC Committee Response:

Disagree. The current language is what design engineers follow.

Comment:

4.6.2.7.6--should read, "The AIR HANDLING SYSTEM shall maintain the relative humidity in the space as defined in the 2015 Uniform Swimming Pool, Spa, and Hot Tub Code, Humidity Control. ~~ASHRAE Handbook – HVACApplications2011, Places of Assembly, Natatoriums."~~ -- References back to specific section that contains minimum requirements for relative humidity Section 4.6.2.5.

MAHC Committee Response:

Disagree. The current language is what design engineers follow.

Comment:

4.6.2.7.6.2--should read, "The AIRHANDLING SYSTEM shall be designed to ~~distribute air toward walls and windows to~~ reduce condensation and mold growth. -- An air handling system can be designed to reduce condensation and mold growth. How this is accomplished is a design issue and should not be specified as to restrict additional design options that are available.

MAHC Committee Response:

Agreed. Edited to clarify. The committee was focused on making sure the air distribution system moved the dry air towards the critical components of the building--the outside walls and windows. For clarity we recommend the following rewrite: The AIRHANDLING SYSTEM distribution system shall be designed by the engineer to achieve several objectives including maintaining space conditions, delivering the outside air to the breathing area and to flush the outside walls and windows which can have the lowest surface temperature, thus the greatest chance for condensation.

Comment:

4.9.1.1.4.1--"Hose bibs shall be installed in accordance with the Uniform Swimming Pool, Spa and Hot Tub Code International Plumbing Code or accessible within an adequate distance of the EQUIPMENT ROOM so that a hose can service the entire EQUIPMENT ROOM." -- Referencing the correct code for the installation of hose bibbs.

MAHC Committee Response:

Agree. Wording simplified and sections merged so there is no need to mention of plumbing code.

Comment:

4.9.1.8.1.1--should read, "The access spaces shall be the greater of:
1) Those required by OSHA, NEC, National Fuel Gas Code, Uniform Mechanical Code or other official requirements; or
The equipment-manufacturers' recommendations.

MAHC Committee Response:

Agree

Comment:

4.9.1.8.4--should read, “Where refrigeration equipment such as an air-conditioner or dehumidifier is located indoors in a building intended for occupation, arrangements for refrigerant relief (if any)shall be according to the Uniform Mechanical Code, INTERNATIONAL MECHANICAL CODE or other applicable CODE.

MAHC Committee Response:

Agree

Comment:

4.9.2.5.2.3.1-- should read, “The exhaust airflow rate shall be the greater of:

1) The OSHA requirements for working in such enclosed spaces, or
2) the amount needed to maintain the concentration of vapors or fumes below the PEL for the expected exposure time (defined by29 CFR 1910.1000 (OSHA)) for each stored chemical, or
3) The amount specified byINTERNATIONALMECHANICALCODESec.502,or
4) the amount specified by the Uniform Mechanical Code Sec. 403.7,or
the amount needed to maintain the specified pressure difference.

MAHC Committee Response:

Partially agree. Section numbers removed.

Comment:

5.6.3.4.1--should read, “Maintenance or repair of electrical circuits or devices shall preserve grounding compliance with the NEC, especiallyArticle250 Grounding and Bonding, Article 680 Swimming Pools, Fountains, and Similar Installations, and Chapter 3,or with applicable local CODES.

MAHC Committee Response:

Disagree. MAHC has simplified to state NEC and not specify subsections for which numbers may change.

Comment:

Acronyms--omit “UPC Universal Plumbing Code”

MAHC Committee Response:

Agreed, deleted.

Comment:

Acronyms--add “UMC Uniform Mechanical Code

MAHC Committee Response:

Disagree, not referencing a specific code in the MAHC.

Comment:

Acronyms--add “USPSHTC Uniform Swimming Pool, Spa, and Hot Tub Code" after TLV

MAHC Committee Response:

Disagree. Not referencing specific code in the MAHC.

Comment:

Glossary--After definition of “Crack,” Add “Cross-Connection” means a connection or arrangement, physical or otherwise, between a potable water supply system and a plumbing fixture, tank, receptor, equipment, or device, through which it may be possible for nonpotable, used, unclean, polluted and contaminated water, or other substances to enter into a part of such potable water system under any condition.

MAHC Committee Response:

Agreed. Added.

Comment:

Glossary--after “Underwater Shelf” definition, add “Uniform Mechanical Code” means the mechanical code standards produced by the International Association of Plumbing and Mechanical Officials.

MAHC Committee Response:

Disagree. The MAHC does not refer to this specific code name so this is not necessary.

Comment:

Glossary--following addition of UMC, add “Uniform Swimming Pool, Spa and Hot Tub Code” means the swimming pool, spa, and hot tub code standards produced by the International Association of Plumbing and Mechanical Officials.

MAHC Committee Response:

Disagree. The MAHC does not refer to this specific code name so this is not necessary.

(17) David Purkiss, NSF International, Ann Arbor, MI
4 comments

Comment:

4.7.1.8.1.1--Add: Non-integral strainers shall be certified in accordance with NSF/ANSI Standard 50. -- REFERENCE: NSF/ANSI 50 Section 7

MAHC Committee Response:

Agree with intent but change not necessary since it is stated elsewhere in MAHC (Section 4.3.1.1, 4.3.2.1)

Comment:

4.7.1.8.2.1--Add: Variable frequency drives shall be used in accordance with Annex J of NSF/ANSI Standard 50. -- REFERENCE: NSF/ANSI 50, Annex J

MAHC Committee Response:

Agree with intent but change not necessary since it is stated elsewhere in MAHC (Section 4.3.1.1, 4.3.2.1)

Comment:

4.7.1.8.2.8 --Add 2.8: Pumps shall be certified in accordance with NSF/ANSI Standard 50. -- The certification of pumps to NSF 50 includes pressure testing, pump curve validation, and self prime performance in addition to other tests.. Having an accurate pump curve is critical for the performance and sizing of equipment installed in the circulation system. For example, performance testing of UV and Ozone units for crypto validation, output ratings for chemical feeders and suction entrapment for drain covers are all directly related to flow rates. -- REFERENCE: NSF/ANSI 50, Section 6

MAHC Committee Response:

Agree with intent but change not necessary since it is stated elsewhere in MAHC (Section 4.3.1.1, 4.3.2.1)

Comment:

4.7.1.9.2--Add: Valves shall be certified in accordance with NSF/ANSI Standard 50. -- REFERENCE: NSF/ANSI 50, Section8

MAHC Committee Response:

Agree with intent but change not necessary since it is stated elsewhere in MAHC (Section 4.3.1.1, 4.3.2.1)

(18) David Savage, Aquatic Development Group, Cohoes, NY

52 comments

Comment:

4.2.1.4.3--What about roll-out gutters?

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.2.1.5--Why so deep for pools requiring slip resistant finish?

MAHC Committee Response:

No change proposed by commenter. Annex contains rationale for the requirement.

Comment:

4.5.16.2--Why limit the infinity edge length to no more than 30 feet?

MAHC Committee Response:

No change proposed by commenter. The Annex provides rationale.

Comment:

4.5.16.2.1--Why no maximum distance for Infinity Edge in less than 5 feet of water?

MAHC Committee Response:

No change proposed by commenter. The Annex provides rationale.

Comment:

4.5.16.6--Why limit the wall to 30”?

MAHC Committee Response:

No change proposed by commenter. The Annex provides rationale.

Comment:

4.5.17.3--Why is the maximum water depth limited to 5’?

MAHC Committee Response:

No change proposed by commenter. In response to the question, the depth restriction is to address the potential safety issue of stepping or otherwise moving off a bench into deep water. The seat depth below the water line is limited to 20 inches maximum so a non-swimmer may be comfortable at that depth but once they move from the bench into a greater water depth it may exceed their comfort and/or skill level.

Comment:

4.5.20.5.1--Why is this needed?

MAHC Committee Response:

No change proposed by commenter. See Annex for rationale.

Comment:

4.5.5.6.2 Figure --Why is tread T-1 wider?

MAHC Committee Response:

No change proposed by commenter. In response to the question, the top step is allowed to be deeper as the gutter trough is often used as the top "step".

Comment:

4.6.1.3.1 #1--Why is indoor lighting minimum greater than outdoor?

MAHC Committee Response:

No change proposed by commenter. In response to the question, the Annex contains the rationale and indicates that there is a difference between indoor and outdoor settings because outdoor settings usually have a higher contrast with darkness that does not occur indoors.

Comment:

4.6.10.1--Need to clarify purpose, define spectators.

MAHC Committee Response:

Disagree. Purpose is clear in context.

Comment:

4.7.1.10.2.1--What does this mean?

MAHC Committee Response:

No change proposed by commenter. In response to question, this section is to address/clarify water that may be withdrawn from and returned to the pool for such items as slides, features,

etc. by a pump separate from the filtration system, that flow rate from the separate pump system shall not be included in the turnover time calculation.

Comment:

4.7.1.10.4.3--Add to the sentence “, in cases where water is drawn from the pool.”

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.4.1.1.1--Why does the POS need to extend around the entire pool perimeter?

MAHC Committee Response:

No change proposed by the commenter. In response to the question, the intent is to remove water from all parts of the pool equally and preclude "dead spots" from occurring.

Comment:

4.7.1.4.2--~~Gutter~~ size and shape “Perimeter Overflow System”

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.4.2.1--Why 125%?

MAHC Committee Response:

No change proposed by commenter. The Annex contains the rationale.

Comment:

4.7.1.4.3.1-2--“125%” why does this include piping?

MAHC Committee Response:

No change proposed by commenter. The Annex contains the rationale.

Comment:

4.7.1.4.4.1--Even for shallow pools?

MAHC Committee Response:

No change proposed by commenter. Agree with implication that less water is displaced by bather in shallow water as less of the body is submerged.

Comment:

4.7.1.4.4.4--Why just surge tanks? Why not all pools, even those without surge tanks?

MAHC Committee Response:

No change proposed by commenter. In response to the question , this section addresses surge tank requirements.

Comment:

4.7.1.5.1.4--100% flow through the skimmer is not possible.

MAHC Committee Response:

Disagree. This section requires the facility owner to contact/consult with the AHJ to determine if plans need to be submitted for review/approval. Substantial alteration (see definition section) is based on the cost of the work. Proposed alterations can have a significant impact on aspects of an aquatic facility while not exceeding the cost threshold. Preliminary consultation allows for an assessment of potential impact and possible need for plan submittal and approval.

Comment:

4.7.1.5.1.5--Why pools using skimmers shall not exceed 30’ in width?

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.7.1.7.2.2--….statement should allow for design professional to provide justification otherwise.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.8.2.1--With use of specific families of case specific pump plot curves

MAHC Committee Response:

No change; not clear what is intended.

Comment:

4.7.1.8.2.7--What is this limit (NPSH requirement) ?

MAHC Committee Response:

No change proposed by commenter. In response to question, there is not a specified limit, it is a system calculation. The Annex under Section 4.7.1.7.2.2 states: "The available NPSH is calculated as follows: absolute pressure on the liquid surface - friction losses in the suction line – vapor pressure of the water + static head of liquid above impeller eye (all terms in feet). "

Comment:

4.7.2.1.3.1.1--Must not contradict NSF requirement.

MAHC Committee Response:

Disagree. Sand filters do not work at 15 or 20 gpm/sf in terms of efficient pathogen removal and protecting public health; reducing filtration rates is the first step toward addressing this problem.

Comment:

4.7.2.4.1--Seems excessive for small facilities using small quantities.

MAHC Committee Response:

No change proposed by commenter. Comment not clear.

Comment:

4.7.3.2.3.1--Not possible.

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.7.3.2.6.2--Introduce chlorine into the ~~pool vessel~~ treatment loop.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.2.6.3--Increase feeder size due to lower chlorine concentration

MAHC Committee Response:

Comment does not correlate to the referenced code section.

Comment:

4.7.3.3.2.4--1_oocyst/100 ml.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.3.3.1--Turbidity range should be measured and labeled.

MAHC Committee Response:

Disagree. Although measurement of turbidity of the water may be a good idea for assessing water quality, labeling on the unit is not necessary.

Comment:

4.7.4.2--Measure flow rate instead of volume.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.7.4.2, 4.7.4.2.1, 4.7.4.2.3--What is this? Are we doing this, or developing the idea of water reuse.

MAHC Committee Response:

No change proposed by commenter. See Annex for discussion.

Comment:

4.8.1.2.1--Concrete is not imperious.

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.8.1.2.2 & 4.8.1.2.2.1--Pre-supposes coping is used.

MAHC Committee Response:

Disagree. This section would apply where coping is used.

Comment:

4.8.1.4.6--We don't agree and do not see the concern.

MAHC Committee Response:

Disagree. The Annex contains the following discussion: 4.8.1.4.6 Landscaping
It is acknowledged that landscaping near AQUATIC VENUES is not an uncommon practice in enhancing an AQUATIC VENUE environment. Landscape materials themselves and the design of special POOL types vary so widely as to require special consideration with respect to landscaping. This paragraph intends to provide the opportunity to allow landscaping, but only through the lens of the local authority.
The landscaping materials are not intended to be placed in the wet PERIMETER DECK area. It is assumed here that the POOL DECK will be designed and sloped to prevent drainage from landscaping materials from reaching the POOL.
For an outdoor AQUATIC VENUE, it is not possible to prevent wind from moving dirt, bugs, plant material, etc. from landscape material around and perhaps into the AQUATIC VENUE. The landscape designer must consider the type and location of landscape materials placed inside or outside of an outdoor AQUATIC VENUE ENCLOSURE.

Comment:

4.8.1.5.1.2--100% perimeter decks should be reconsidered. We do not agree 100% peripheral decks are always required for all venues.

MAHC Committee Response:

Disagree. Annex contains the following discussion: Traditional AQUATIC VENUEs should be surrounded by clear DECK space to allow for operational flow (foot traffic) as well as space to perform in the event of an emergency situation. Non-traditional AQUATIC VENUEs such as LAZY RIVERS, WAVE POOLS, etc. are not required to have clear space around due to the need to control access by providing a BARRIER to block access into unapproved entry areas. Both guarded and unguarded AQUATIC VENUEs should have the same clear space requirements.

Comment:

4.8.1.7.8.--What are <u>No</u> guard rails?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.4--What about Deck slides? Left Blank

MAHC Committee Response:

Disagree. Choose to keep for future language to be added.

Comment:

4.8.7.2--Is this intended for all venues?

MAHC Committee Response:

No change suggested. Yes, multiple venues at the facility can use the same equipment.

Comment:

4.8.7.8--This may not be possible, if outlets are far, power cords are forced to be long.

MAHC Committee Response:

Agree; deleted section 4.8.7.8. Section 5.6.3.6 provides provisions for extension cord use.

Comment:

4.9.1.1.1--Sump drain pump.

MAHC Committee Response:

Agree

Comment:

4.9.1.1.2--Should use consistent language (sump/drains) .

MAHC Committee Response:

Agree; wording added to clarify

Comment:

4.9.1.1.4--Is this practical (contradicts w/ 4.6.1.1.4.1).

MAHC Committee Response:

Agree. Wording simplified and sections merged so there is no need to mention of plumbing code.

Comment:

4.9.1.1.4.1--They should be both installed in accordance w/ the int'l plumbing code <u>and</u> accessible……

MAHC Committee Response:

Agree. Wording simplified and sections merged so there is no need to mention of plumbing code.

Comment:

4.9.2.11.1--4.7.3.2.4.1 Says "no compressed chlorine gas" .

MAHC Committee Response:

Agreed. We have added wording to section and elsewhere in MAHC clarifying that it is allowed in existing facilities, if in compliance with requirements, but not in new or substantially altered facilities. (Have added wording in two sections in 4 and in 5.)

Comment:

4.9.2.9.1--4.9.2 Does not address panels conductors.

MAHC Committee Response:

Disagree. The MAHC does not provide relief from applicable codes. Nothing in this section shall be construed as providing relief from applicable requirements of fire CODES, mechanical CODES, electrical CODES, etc.

Comment:

Glossary--Enclosure barrier: ~~Such as a swimming pool, wading pool, or spa~~

MAHC Committee Response:

Agree. Not used in code, deleted.

Comment:

Glossary--Cleansing shower: Enter the ~~pool~~ " aquatic venue"

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--Catch pool: Section of a ~~pool~~ "aquatic venue"…….

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Separation barrier: ~~Pool enclosure~~ aquatic facility

MAHC Committee Response:

Agreed. Not used in code, deleted.

Comment:

Glossary--Plunge pool. Refer to comments for catch pool

MAHC Committee Response:

Agreed. Plunge pool deleted and definition merged with catch pool.

Comment:

Glossary--Lazy river & leisure rivers: What is the difference between these two

MAHC Committee Response:

Agreed. They are the same. Leisure river was meant to be deleted.

(19) David Watts, Several Pool Management Companies, Hunt Valley, MD
13 comments

Comment:

4.10.4.2.1--Current: Total male and female cleansing shower count shall be the greater of the following two options: 1)in accordance with applicable state and local codes, or 2) based on the bather load of the aquatic venue. Recommended: replace option 2 with International Code Council requirements. Rationale: The International Code Council already addresses this in their code. Creating a different standard from an existing code could cause conflicts with different agencies. Basing the number of showers on bather load is not reasonable for large facilities such as waterparks that have thousands of guests each day – the number of showers needed would not be practical from either a cost or space standpoint. -- REFERENCE: Section 609.2 of International Swimming Pool and Spa Code; member of ICC

MAHC Committee Response:

Disagree. If the ICC code is adopted in a jurisdiction, then option 1 would apply, if not adopted, no conflict would exist.

Comment:

4.10.4.2.2--Current: Minimum total cleansing shower count shall be equal to 1 cleansing shower per 40 bathers for every aquatic facility. Recommended: Delete
Rationale: See comments for 4.10.4.2.1

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.4.3.1 & 5-7--Current: A minimum of 1 rinse shower shall be provided on the deck near an entry point to the aquatic venue. Recommended. Recommended: Delete or consider " There should be a cleansing shower located at the entrance of an aquatic venue located more than 200 yards from a hygiene facility that has a cleansing shower"." Rationale:as large aquatic facilities are addressed in 4.10.4.3.5,this section will apply to facilities under 7500 sq ft. The hygiene facilities in a facility of this size will be very close to any aquatic venue in the facility and the benefit of having additional rinse showers does not outweigh the cost when cleansing showers are readily available.

MAHC Committee Response:

Disagree. See Annex for discussion and rationale.

Comment:

4.10.4.3.4--Current: Rinse showers in aquatic facilities greater than 7500 square feet of water surface area shall be situated adjacent to each aquatic venue entry point or arranged to encourage bathers to use the rinse shower prior to entering the aquatic venue.
Recommended: Rinse showers in aquatic facilities greater than 7500 square feet of water surface area shall be situated adjacent to each aquatic venue entry point or arranged where patron traffic flow patterns are greatest to encourage bathers to use the rinse shower.
Rationale: The cost to provide the numbers dictated in the draft is enormous for large facilities. The ability to winterize so many shower heads with potentially long fresh water runs under the deck can be challenging.

MAHC Committee Response:

Disagree. See Annex for discussion and rationale.

Comment:

4.10.4.3.5--Current: A minimum of 4 showerheads per 50 feet of beach entry aquatic venues shall be provided as a rinse shower.
Recommended: Delete
Rationale: Shower heads at a beach entry will create a trip and fall hazard as well as the issues as described in comments for 4.10.4.3.4

MAHC Committee Response:

Disagree. It is not clear how shower heads will create a trip and fall hazard.

Comment:

4.12.5.2.1--Current: Means of access/egress shall be provided at 150 foot (45.7 m) intervals around the lazy river. Recommended: More than one means of access/egress shall be provided, at intervals appropriate for the design. Rationale: exits at 150 ft intervals are not appropriate for many designs and will affect safety of the ride by creating guest traffic flow problems. In addition, at 150 foot, there will be additional blind spots created. This will require additional lifeguards which will significantly adversely affect operating budgets.)

MAHC Committee Response:

Disagree. Annex provides rationale for the distance requirement.

Comment:

4.8.6.3.1--Each unguarded venue shall have a self-closing and self-latching gate.
Current: All primary public access gates or doors serving as part of an aquatic venue enclosure shall be self-closing and self-latching from any open position. Recommended: All primary public access gates or doors serving as part of an unguarded aquatic venue enclosure shall be self-closing and self-latching from any open position. Rationale:
Self-closing, self-latching gates at aquatic venues that are guarded and have high crowd capacity could create traffic flow problems and are unnecessary.

MAHC Committee Response:

Disagree. It is necessary to keep this requirement to equip the gates/doors with the self-closing and self-latching hardware, in this Design and Construction section. However, a new section in Operation and Maintenance has been added to allow the gates/doors to be maintained open if the gates/doors are staffed at all times when open.

Comment:

5.4.1.2.2--Current: The water in an aquatic venue with uncontrolled access closed more than seven days that is not drained shall be treated to assure that the water quality parameters meet the criteria of this code. Recommended: The water in an aquatic venue with uncontrolled access closed more than seven days that is not drained shall be treated to assure the water quality is not conducive to mosquito breeding.
Editorial note – does “uncontrolled access” need to be defined? Rationale: Plaster pools and pools in areas where the water table is high, need to have water left in the pool over the winter. Not all pool sizes and shapes lend themselves to pool covers. Water can be treated until such a time when the temperature of the water will no longer permit mosquito breeding.

MAHC Committee Response:

Agreed. New wording should clarify choices.

Comment:

5.5.6.1.1--Current: Cracks exhibiting any of the following…shall be evaluated by structural engineer. Recommendation: Delete the requirement that cracks require evaluation by a structural engineer and instead allow evaluation by individuals allowed by the International Code Council for this type of pool surface vent. Rationale: Pool surface cracks are not unusual in environments that experience the freeze-thaw cycle of winters. Requiring a structural engineer will delay time to repair and increase costs significantly. -- REFERENCE: www.iccsafe.org

MAHC Committee Response:

Agreed. We have changed the wording to reflect public health and safety performance criteria requiring (trips, falls, laceration) and moved old wording to annex.

Comment:

5.6.7.4.2--Current: A volume of water totaling at least to 4 gallons (15L) per bather per day per facility shall be either 1)discharged from the system, or 2)treated with an alternate system meeting the requirement of MAHC Section 4.7.4.2.1 and reused. Recommendation: Delete or revise. Rationale: Water discharge should be based on reducing TDS levels as indicated by testing, not bather load. The reasons are these: Water plants are moving to disinfection with chloramines rather than chlorine. Ex. American Water company which serves at least 17 states in the treatment of drinking water is moving to using chloramines for disinfection rather than chlorine, as they want to reduce the DBPs in the drinking water. The chloramine levels in the source water can be between 1.7 ppm – 3.4 ppm per their website below. By constantly discharging balanced pool water and introducing source water, we will be constantly introducing chloramines into the pool. We will also be constantly introducing disinfectant bi-products (DBPs) into the sanitary sewer system, which is the very reason the water companies are moving away from using chlorine in favor of chloramines. Another consequence of regularly introducing source water to the swimming pool, is that the source water is not likely to have the pH, calcium hardness or total alkalinity levels that pool water needs to be balanced water. In St. Louis County Missouri, when tested last week, our source water had a chloramine level of 1.9 ppm, a pH of 8.6, total alkalinity of 53 ppm and calcium hardness of 152 ppm. See website for information. The environmental impacts of this requirement, especially in drought areas could be significant and result in pools not opening. -- REFERENCE: http://www.amwater.com/files/Chloramine%20-%20Mechanicsburg.pdf

MAHC Committee Response:

Disagree. TDS is not the critical issue; total organics is very important to water and air quality. Admittedly, the exact amount of water to discharge is not known and will likely vary between pools (based on location, source water, bather density, temperatures, etc.). It is generally accepted that some water must be discharged to remove contaminants that will otherwise accumulate in pools over time. The starting point is a system to measure the discharge and a minimal rate to start with.

Comment:

6.2.2.1--Current: Lifeguard Supervisor candidate prerequisites shall include, but not limited to: successful completion of a lifeguard training course in the past, 2) Previous experience as a lifeguard of at least 3 months, 3) and ability to effectively communicate verbally in English.
Recommended: Lifeguard Supervisor candidate prerequisites shall include, but not limited to: 1)Lifeguard experience of at least 3 months within the last 2 years or 18 years of age or older with management or leadership experience 2)and ability to effectively communicate verbally in English.
Rationale: a lifeguard training course in the "past", if it is not the recent past, is irrelevant to being a qualified supervisor with knowledge of today's standards. Allowing employers to designate an individual older than 18 who has strong leadership and management skills, but not recent experience (such as a teacher working for the summer) will reduce the burden of meeting this requirement without sacrificing quality.
Lifeguarding experience is ideal, but having a mature, responsible individual are more relevant prerequisites than a younger person without those qualities, but who has lifeguarding experience (as would be allowed under the current prerequisites

MAHC Committee Response:

Disagree. Disagree with statement that having experience as a lifeguard is a lesser necessity for being a good Lifeguard Supervisor, as it is necessary to have foundational knowledge as to what you are supervising. Also, past completion of a lifeguard course is not irrelevant because as stated above, it provides the foundational knowledge of the position to be supervised.

Comment:

6.3.4.4.2--Current: One of the qualified lifeguards…may be designated as the lifeguard supervisor in addition to fulfilling the duties of qualified lifeguard. A qualified lifeguard cannot be on duty with scanning responsibilities if they are acting as the lifeguard supervisor.
Recommendation: Delete second sentence. Rationale: this is confusing, and the issue of supervisor duties interfering with the primary duty of patron surveillance is addressed in 6.3.4.4.3

MAHC Committee Response:

Agree. Code revised.

Comment:

General--Delete the requirement that cracks require evaluation by a structural engineer. Pool surface cracks are not unusual in

MAHC Committee Response:

Agreed. Deleted. Discussion moved to annex and cracks that pertain to protecting public health retained.

(20) Doug White, Schlitterbahn, Galveston, TX
5 comments

Comment:

5.6.10.4.4--Remove this section as it is not plausible to maintain water lines with disinfectant.

MAHC Committee Response:

Agreed on thought. Wording edited to address issue.

Comment:

5.6.10.5.2--Not including burglar or fire alarms

MAHC Committee Response:

Agreed, wording edited.

Comment:

5.6.10.6.2--Any vacuum with guests in the pool. If pool is closed, then proceed as needed.

MAHC Committee Response:

Not clear on suggested change.

Comment:

5.6.9.1.2--Food in swim up bars will be allowed as long as it is kept on perimeter of pool or at the bar itself?

MAHC Committee Response:

Agreed. Wording edited.

Comment:

5.6.9.1.3--Drinks shall be allowed as long as they are at the perimeter of pool or at the bar itself.

MAHC Committee Response:

Agreed. Wording edited.

(21) Ellen Meyer & David Stark, Lonza, Charleston, TN;
(22) Paul Meilink, Commercial Clearwater Company, Inc., Plandome, NY
5 comments

Comment:

5.7.3.1.3.1--Insert "3) All indoor venues; and
4) Aquatic venues designed primarily for diaper-aged children (children < 5 years old), such as
a. Wading pools
b. Interactive water play venues with no standing water.
-- It is clear that CYA slows the kill rate of chlorine. The argument given in the annex appears to be that since we consider the risk to be acceptable for outdoor pools as long as the minimum available chlorine is 2 ppm, then this risk should also be acceptable for indoor pools. However, for outdoor pools, you are balancing the risk of having no chlorine residual without stabilizer, with the risk from decreased efficacy of chlorine. In indoor pools where chlorine degradation from UV is minimal, the acceptable risk balance point is different from outdoor pools. In an outdoor pool there are public health advantages to stabilizing the chlorine residual. In an indoor pool, since there are no public health advantages to using a stabilizer, the use of CYA should be prohibited.

MAHC Committee Response:

Disagree. It is not clear that we can define the risk or difference in risk for common bacterial pathogens between chlorine and stabilized products. The concentration of stabilized chlorine required has been doubled to give a safety factor. For more tolerant pathogens unstabilized chlorine is less effective as well. We are not considering the role of stabilizer in maintaining a residual in any setting since from a regulatory standpoint, all pools must be treated and no excuses are accepted regardless of disinfectant used.

Comment:

5.7.3.1.3.1.1--Replace "These aquatic venues" with "Indoor pools" -- The replacement schedule of 4 years is reasonable for indoor pools.

MAHC Committee Response:

Disagree. It is not clear that we can define the risk or difference in risk for common bacterial pathogens between chlorine and stabilized products and the concentration of stabilized chlorine required has been increased. For more tolerant pathogens unstabilized chlorine is less effective as well. We are not considering the role of stabilizer in maintaining a residual in any setting since from a regulatory standpoint, all pools must be treated and no excuses are accepted regardless of disinfectant used.

Comment:

5.7.3.1.3.1.2--The cyanuric acid level at aquatic venues shall remain at or below 50 ppm (mg/l). -- As cited in the annex, there are numerous studies showing that kill rates decrease

with increasing CYA concentrations. Since most stabilization of chlorine to UV occurs with <50 ppm CYA, there is no public health advantage to allowing higher values. Citing the World Health Organization Guidelines is not sufficient justification. The WHO Guidelines do not provide peer-reviewed data to justify their limit of 100 ppm. Furthermore, the WHO guidelines were published before the work by Shields showing the effect of CYA on Crypto kill rates. Due to the lack of data to support the 100 ppm limit, the limit should be set to the value of what is needed to maintain a chlorine residual in outdoor pools.

MAHC Committee Response:

Disagree. There are no data currently guiding what this level should be so the MAHC has gone with generally accepted practice in most codes and WHO recommendation. The publications do not vary cyanurate level over a range to determine what the impact is on disinfection so these data are needed before such a decision can be made. The Shields paper picked one concentration but we do not have definitive data (vs. theoretical/calculated) to say how this changes with other concentrations.

Comment:

5.7.3.1.3.1.3--New text: “Spas, therapy pools, and aquatic venues designed primarily for diaper-aged children shall no longer use cyanuric acid or stabilized chlorine products no later than 2 years after adoption of this code -- Spas, therapy pools, wading pools and interactive water play venues serve a higher risk bather population. The use of stabilized products which slows the kill rate of chlorine should be phased out of use more quickly for these high risk populations. The primary benefit of using cyanuric acid and stabilized products is to minimize chlorine usage and cost. Spas, therapy pools wading pools and interactive water play venues use very little chlorine compared to larger venues. The small benefit these high risk venues may see in lower chlorine consumption is far outweighed by the risk that slowing the sanitizer kill rate presents to the safety of the bather.

MAHC Committee Response:

Disagree. It is not clear that we can define the risk or difference in risk for common bacterial pathogens between chlorine and stabilized products and the concentration of stabilized chlorine required has been increased. For more tolerant pathogens unstabilized chlorine is less effective as well. We are not considering the role of stabilizer in maintaining a residual in any setting since from a regulatory standpoint, all pools must be treated and no excuses are accepted regardless of disinfectant used.

Comment:

6.1.2.1.1.5--Replace current sentence with:

Cyanuric acid (CYA) including:
1) Definition of cyanuric acid and how chlorine is bound to it
2) Defining ways that CYA is added to pool water in uncontrolled ways (addition of stabilized sanitizers) and controlled says (addition of cyanuric acid separate from the chlorine sanitizer).

3) Dose response curves showing the impact of CYA on stabilization of chlorine residuals in the presence of UV, pointing out the benefits of both a stable residual for public health as well as facility cost savings.
4) Dose response curves showing the impact of CYA on chlorine kill rates, pointing out the potential for increased risk of disease transmission, and the impact of CYA concentrations on crypto remediation procedures.
5) Strategies for controlling the concentration of CYA to prevent overuse.
6) Strategies for reducing the concentration of CYA when it exceeds the maximum allowable level.
-- The training requirements regarding CYA needed to be spelled out in more detail to make sure that students understand why cyanuric acid is used, why its use should be limited, and what steps they can use to control its concentration.

MAHC Committee Response:

Agreed, added wording and did some editing.

(23) Franceen Gonzales, White Water West
598 comments

Comment:

1.1.3--This document does not address all safety or public health concerns associated with its use. It is the responsibility of the user of this document to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to each use. -- Delete the term "if any" as it undermines the intent of the MAHC. This is a code that addresses safety practices.

MAHC Committee Response:

Agreed, edited.

Comment:

1.2.2--Cryptosporidium, which is spread by the ingestion of fecal material and causes a diarrheal disease, is tolerant of CHLORINE and other halogen disinfectants. Cryptosporidium has emerged as the leading cause of pool associated outbreaks in the United States. -- Need to define or describe fecal-orally. Several comments received on this.

MAHC Committee Response:

Agreed, edited.

Comment:

1.5.1--In addition, the MAHC's combination of performance-based recommendations gives AQUATIC FACILITIES freedom to use innovative approaches to achieve acceptable results. However, AQUATIC FACILITIES must ensure that these recommendations are still being met, whatever the approach may be. --The MAHC should not be prescriptive if it seeks to allow for innovation.

MAHC Committee Response:

Agreed, edited.

Comment:

4.1.--ADD: This model code establishes the minimum standards for design, construction, operation, and management of aquatic venues. -- A scoping statement should be added to clarify several points: New vs existing facilities and venues and Pools and attractions (venues) vs rides

MAHC Committee Response:

Agree. Code revised to include applicability of sections 4, 5, and 6 in Section 2 User Guide and at the beginning of Sections 4, 5, and 6.

Comment:

4.1.--ADD: The design and construction requirements of this model code apply to new construction and substantial alteration of venues and facilities completed after the adoption of this code except where noted. -- Add Scope for Section 4 that indicates that the design and construction requirements apply to NEW AQUATIC VENUES only. Absent this clarification, an owner or regulator might incorrectly interpret the code to require immediate demolition, redesign and reconstruction to comply with this code. Such a requirement would be onerous and result in the closure of most, if not all, aquatic venues subject to this code. This would further hamper efforts toward adoption by AHJs.

Construction Overall, there needs to be specific guidance as to what is only required of new construction or substantial alteration and what is immediately required upon adoption of the code. Many of the Section 5 requirements are based on meeting Section 4 design/construction requirements. Is anything grandfathered? This is especially the case with the requirements for cleansing and rinse showers. Rinse showers have not been required by many if not most local codes to date. Installing such showers at existing venues will be extremely costly as new water and sewer lines will be required with resultant excavation work. Additionally, new water taps will also be required to support these additional showers at considerable expense.

MAHC Committee Response:

Agree. Code revised to include applicability of sections 4, 5, and 6 in Section 2 User Guide and at the beginning of Sections 4, 5, and 6.

Comment:

4.1.--ADD: 4.1 This model code does not apply to rides and attractions installed into aquatic venues although it does apply to the aquatic venue structures that hold and treat water used in such attractions. -- A scoping statement should be added to clarify several points: New vs existing facilities and venues and Pools and attractions (venues) vs rides

MAHC Committee Response:

Partially agree. Code revised to include applicability of sections 4, 5, and 6 in Section 2 User Guide and at the beginning of Sections 4, 5, and 6. No change regarding rides and attractions, the code does not require or otherwise imply design criteria for rides or attractions that are not specifically addressed.

Comment:

4.1.2.2.2--Detailed scaled and dimensional drawings for each individual AQUATIC VENUE shall include location and type of:

1) INLETS,
2) Overflows,
3) Drains,
4) Suction outlets,
5) Overflow gutters or devices,
6) Piping,
7) Designed POOL water elevation,
8) AQUATIC FEATURES such as ladders, stairs, diving boards, slides, and play features, and
9) Lighting.
10) Pool Markings
9)11) Surface materials

-- Pool markings, especially those required by the code, should be identified and dimensioned. Surface materials should also be identified.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.1.2.2.2--Add: "10) Pool Markings, and 11) Surface Materials" -- Pool markings, especially those required by the code, should be identified and dimensioned. Surface materials should also be identified.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.1.2.2.4--Detailed scaled and dimensional drawings for each individual AQUATIC VENUE shall contain a flow diagram showing the location, plan, and elevation, and isometrics... -- Isometric indicates drawn with a 3D representation. A 2D flow diagram or P&ID will show the same information, but may easier to read and complete.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.1.2.2.4--Detailed scaled and dimensional drawings for each individual AQUATIC VENUE shall contain a flow diagram showing the location, plan, and elevation, ~~and isometrics~~ of… -- Isometric indicates drawn with a 3D representation. A 2D flow diagram or P&ID will show the same information, but may easier to read and complete.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.1.2.3.5--THEORETICAL PEAK OCCUPANCY~~Bather Load~~ The technical specifications for each AQUATIC FACILITY and each AQUATIC VENUE shall include ~~anticipated maximum BATHER LOAD~~THEORETICAL PEAK OCCUPANCY, ~~-~~respectively. The theoretical peak occupancy for an aquatic venue is utilized for designing systems that serve bathers. These density factors are the lower limits for determining theoretical peak occupancy. The theoretical peak occupancy for an AQUATIC FACILITY is utilized for designing systems that serve bathers and patrons utilizing the decks and other portions of the facility not associated with AQUATIC VENUES. The density factors in MAHC 4.1.2.3.5.1 may be modified for higher bather density, but not lower than the factors listed, if the designer/engineer of the aquatic facility or venue can document the intended use is different (for example, a swimming POOL is a flat water venue and is normally 20 ft2 per person, but when designing a flat water wading pool, which has a higher density of bathers, the number could be modified to15 ft2 per person).

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.1.2.3.5.1--THEORETICAL PEAK OCCUPANCY Calculation

The Theoretical Peak Occupancy shall be calculated by using the following formula by dividing the surface area in ft2 of the AQUATIC VENUE by the density factor (D) that fits the specific AQUATIC VENUE being considered.

Theoretical Peak Occupancy = AQUATIC VENUE surface area / D

The density factors are:

1) Flat WATER Density factor = 20 ft2 per person.

2) Agitated WATER Density factor = 15 ft2 per person.

3) HOT WATER Density factor = 10 sq ft per person.

4) Deck density factor = 50 sq ft per person

5) Stadium seating density factor = 6.6 sq ft per person

6) Waterslide catch pool density factor = manufacturer-established capacity at any given time

7) Interactive Water Play density factor = 10 sq ft per person on surfaces.

MAHC Committee Response:

Agree. Edited.

Comment:

4.1.3.1.3--Delete section -- The owner cannot be held responsible for the accuracy and completeness of plans. They may not have the skillset in which case they are relying on professionals for this service.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.1.3.2.1--Delete section -- If there is a need to notify the AHJ of a non-substantial alteration, they why distinguish between the two? This requirement would bog down bureaucratic systems. This requirement is unnecessary.

MAHC Committee Response:

Disagree. This section requires the facility owner to contact/consult with the AHJ to determine if plans need to be submitted for review/approval. Substantial alteration (see definition section) is based on the cost of the work. Proposed alterations can have a significant impact on aspects of an aquatic facility while not exceeding the cost threshold. Preliminary consultation allows for an assessment of potential impact and possible need for plan submittal and approval.

Comment:

4.1.3.2.2--DELETE section -- If there is a need to notify the AHJ of a non-substantial alteration, they why distinguish between the two? This requirement would bog down bureaucratic systems. This requirement is unnecessary.

MAHC Committee Response:

Disagree. This section requires the facility owner to contact/consult with the AHJ to determine if plans need to be submitted for review/approval. Substantial alteration (see definition section) is based on the cost of the work. Proposed alterations can have a significant impact on aspects of an aquatic facility while not exceeding the cost threshold. Preliminary consultation allows for an assessment of potential impact and possible need for plan submittal and approval.

Comment:

4.1.3.2.3--DELETE SECTION -- The subject of fees does not belong in model code language. Every jurisdiction will set their fees, if any, as they see fit

MAHC Committee Response:

Agree. Code revised.

Comment:

4.1.3.2.3.1--Delete section -- The subject of fees does not belong in model code language. Every jurisdiction will set their fees, if any, as they see fit

MAHC Committee Response:

Agree. Code revised.

Comment:

4.1.3.3.1--The replacement of pumps, filters, feeders, controllers, SKIMMERS, flow-meters, valves, or other similar equipment with identical or substantially similar equipment may be done without submission to the AHJ for approval. ~~of new or altered AQUATIC FACILITY plans~~. -- Clarify this is not necessary for AHJ approval.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.1.3.3.2--Delete Section -- The above line states it is unnecessary to submit when the replacement is identical or substantially similar. This line is contradictory.

MAHC Committee Response:

Disagree. Submission of the technical specification for replacement equipment is different than submission of aquatic facility plans.

Comment:

4.1.3.3.3--In emergencies, if the replacement is not an equivalent, identical, or substantially similar, the replacement may be made prior to receiving the AHJ's approval.~~, with the owner accepting responsibility for proper immediate replacement, if the equipment is not deemed equivalent by the AHJ.~~ --Unclear as to how the owner is responsible differently from any other responsibility of operating a business.

MAHC Committee Response:

Disagree. The intent of this section is to make it clear that, although emergency replacement of equipment is acknowledged; if upon review, it is determined to be not equivalent, the owner must immediately replace it with the proper equipment.

Comment:

*4.1.3.3.3.1--*Where emergency replacements are installed as per 4.1.3.3.3, t~~T~~he owner shall submit documentation for review and approval of the replacement to the AHJ ~~for formal approval~~ within 45 days. ~~of installation for review and approval.~~ -- Clarify language.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

*4.1.4--*Compliance ~~Certificate~~Documentation

MAHC Committee Response:

Disagree. Certificate meaning "document testifying to accuracy" or "document certifying fulfillment of requirements" is intended and appropriate.

Comment:

4.1.4.1--~~Construction Compliance Certificate~~General Conformance Statement -- Certificate indicates an organization is sponsoring a certification program. A statement of conformance is a more accepted term and implies the same that the professional is making that statement.

MAHC Committee Response:

Disagree. Certificate meaning "document testifying to accuracy" or "document certifying fulfillment of requirements" is intended and appropriate.

Comment:

4.1.4.1--A ~~certificate~~ statement of general conformance ~~of construction compliance~~ shall be submitted to the regulatory authority for all AQUATIC FACILITY plans for new construction and SUBSTANTIAL ALTERATIONS requiring AHJ approvals -- Certificate indicates an organization is sponsoring a certification program. A statement of conformance is a more accepted term and implies the same that the professional is making that statement.

MAHC Committee Response:

Disagree. Certificate meaning "document testifying to accuracy" or "document certifying fulfillment of requirements" is intended and appropriate.

Comment:

4.1.4.2--~~Certificate~~ Statement Preparation This ~~certificate~~ statement shall be prepared by a licensed professional and be within the scope of their practice as defined by the state or local laws governing professional practice within the jurisdiction of the permit issuing official. -- Certificate indicates an organization is sponsoring a certification program. A statement of conformance is a more accepted term and implies the same that the professional is making that statement.

MAHC Committee Response:

Disagree. Certificate meaning "document testifying to accuracy" or "document certifying fulfillment of requirements" is intended and appropriate.

Comment:

4.1.4.3--~~Certificate~~ Constructed in Accordance~~Statement~~ The ~~certificate~~ statement shall ~~also include a statement~~document that the AQUATIC FACILITY has~~, all equipment, and appurtenances have~~ been constructed in general conformance ~~accordance~~ with the approved drawings~~plans~~ and specifications. -- This clarifies the language and removes equipment and appurtenances as these would be detailed in the drawings and specifications.

MAHC Committee Response:

Partially agree. Certificate meaning "document testifying to accuracy" or "document certifying fulfillment of requirements" is intended and appropriate. Code revised to clarify installation of equipment and appurtenances.

Comment:

4.1.4.4--If c~~C~~ommissioning or testing reports for systems such as AQUATIC FACILITY lighting, air handling, recirculation, filtration, and/or DISINFECTION are conducted, then those reports~~, and BATHER SAFETY~~ shall be included in furnished documentation. -- Rephrased so as not to require commissioning for each system if not required in other parts of the code. Removed bather safety as that is not an identified system.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.1.1--Delete section -- There are other items that are required for all facilities. I have edited to make the statement in each of the referenced lines. Diaper changing stations already has language where the sink is required within 1 year.

MAHC Committee Response:

Disagree. Section kept and wording clarified in specific chapter 4 sections and in section 5. This information needs highlighting so designers know the few instances where the change is shorter term than "new construction."

Comment:

4.10.1.3--Delete section -- unnecessary

MAHC Committee Response:

Disagree. Provides clear indication to designer/owner that not only is compliance with MAHC requirements necessary, state and local codes must also be addressed.

Comment:

4.10.1.4--Delete section -- This language is not enforceable as it gives no way to calculate maximum occupant load. We have suggested Theoretical Peak Occupancy and have edited the relevant line items where quantity needs to be determined.

MAHC Committee Response:

Partially agree. Code revised to refer to "Theoretical Peak Occupancy".

Comment:

4.10.1.5--Delete section -- Included a section on calculating occupancy for other venues that may have standing water.

MAHC Committee Response:

Agreed. Section 4.10.1.5 revised and section 4.10.1.5.1 deleted.

Comment:

4.10.1.5.1--THEORETICAL PEAK OCCUPANCY~~BATHER LOAD~~ for all AQUATIC VENUES shall be calculated as defined in MAHC Section 4.1.2.3.5.1. ~~6.2.1.7~~.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.10.1.5.1--Change Header to "Theoretical Peak Occupancy"

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.10.2.2--Change header to "Children less than 5 years of age"

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.10.2.2--An AQUATIC VENUE~~S~~ designed primarily for use by ~~DIAPER-AGED CHILDREN~~children less than 5 years of age shall have a drinking fountain, toilet, HAND WASH STATION, and DIAPER-CHANGING STATION located no greater than 200 feet (61m) walking distance and in clear view from the nearest entry/exit of the AQUATIC VENUE.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.10.3.3.3--Change header to ADA

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.3.3.3--Where DECK areas serve as ACCESSIBLE ROUTES or portions thereof, slopes in any direction shall not exceed ~~ADAAG Guidelines~~the requirements of the 2010 ADA and MAHC Sections 4.8.1.3.1. -- New reference

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.3.4--Partitions ~~and ENCLOSURES~~ adjacent to HYGIENE FACILITIES shall have a smooth, easy-to clean, impervious surface. -- A partition could be part of an enclosure. Unnecessary to mention both. Enclosure has many meanings in this code.

MAHC Committee Response:

Partially agree. Code revised to remove capitalization for ENCLOSURE.

Comment:

4.10.4.2.1--The minimum number of cleansing showers shall be one per sex for facilities less than 4000 square feet in collective aquatic venue surface area. An additional cleansing shower per sex shall be added for each additional 4000 square feet of aquatic space or portion thereof. ~~Total male and female CLEANSING SHOWER count shall be the greater of the following two options:~~ -- Replace it with the suggested language. The ratio, as written, is impractical, places a significant cost burden on new large aquatic facilities, and there is not adequate supporting documentation to justify this requirement. A facility with a bather load of only 2000 would be required to have 50 cleansing showers! 4000 square feet based on peak occupancy of 20 sq feet per person is 1 cleansing shower per gender for every 200 bathers as calculated by theoretical peak occupancy of aquatic space at any given time.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.4.2.2--Delete

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.4.2.4--Delete Already addressed in the lines above

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.4.3.3--Floors of RINSE SHOWERS shall be sloped to drain wastewater away from the AQUATIC VENUE ~~and meet local applicable CODES~~. -- Unnecessary as facilities already have to comply.

MAHC Committee Response:

Disagree. Provides further clarification.

Comment:

4.10.4.3.4--Delete -- Unnecessary as one per venue is already required.

MAHC Committee Response:

Disagree. Wording allows some flexibility for larger aquatic facilities in locating the rinse showers.

Comment:

4.10.4.3.5--Delete -- This is excessive and there is no support that states having more showers encourages more showering.

MAHC Committee Response:

Disagree. See Annex for discussion and rationale.

Comment:

4.10.4.3.6--Delete -- There is no rationale as to why a lazy river would warrant having more rinse showers.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.4.3.7--Delete -- 1 rinse shower is already required for an aquatic venue.

MAHC Committee Response:

Disagree. Waterslides may be part of an aquatic venue. The intent is to provide a rinse shower at each entrance to a waterslide queue line.

Comment:

4.10.4.4.1--Delete -- This is a complicated formula and is not based on occupancy, only arbitrary square footages.

MAHC Committee Response:

Disagree. See Annex for discussion and rationale.

Comment:

4.10.4.6.4--If lockers are provided, they shall be ~~set either on a solid base~~ installed at least 3.5 ~~6~~ inches (15cm) above the finished floor ~~high~~ or on legs or a base of at least 3.5 ~~6~~ inches high. ~~and far enough apart to allow for cleaning and drying underneath the locker.~~ -- Allows for wall mounted lockers. Standard bases are 3.5 inches. These are not food lockers and as such there is not rationale for 6 inches.

MAHC Committee Response:

Partially agree. Code revised. The rationale for the height above the floor is to facilitate cleaning and drying.

Comment:

4.10.4.6.5--Soap dispensers shall be securely attached adjacent to hand washing sinks and at each CLEANSING SHOWER. Soap dispensers per the requirements of this section shall be installed within 1 year of the adoption of this code. -- Moved from the general statement as there are several items required to be installed in all facilities but not all were listed in the general statement. Better to identify them individually.

MAHC Committee Response:

Disagree. Left in the general statement and now include wording covering the requirement in section 5 for existing facilities.

Comment:

4.10.4.6.9--A minimum of one hands-free trash receptacle shall be provided in areas adjacent to hand washing sinks. Trash cans, per the requirements of this section shall be installed within 1 year of the adoption of this code. -- Moved from the general statement as there are several items required to be installed in all facilities but not all were listed in the general statement. Better to identify them individually.

MAHC Committee Response:

Disagree. Left in the general statement and now include wording covering the requirement in section 5 for existing facilities.

Comment:

4.11.1.1--Water used in ~~serving an~~ AQUATIC ~~-~~venues~~FACILITY~~ shall be supplied from a potable water source. -- Some facilities use reclaimed water for irrigation. This would clarify.

MAHC Committee Response:

Disagree. See Annex for discussion and rationale.

Comment:

4.11.2.1

If a fill spout is used at an AQUATIC VENUE in which the fill spout is within the reach of a bather, the fill spout shall be located so that it is not a SAFETY hazard to BATHERS. -- Need to identify when the fill spout is accessible.

MAHC Committee Response:

Disagree. The location can also result in a trip hazard.

Comment:

4.11.2.4--The open end shall be separated from the water by an air gap of at least 1.5 pipe diameters or 6 inch air gap, whichever is greater , measured from the pipe outlet to the POOL. -- Creates a minimum.

MAHC Committee Response:

Disagree. No data to support increased separation distance. This requirement is consistent with Internationally/Nationally recognized plumbing codes. Have added clarification wording to 5.6.7.1 as well.

Comment:

4.12.2--Waterslide is one word -- In general, waterslides from a design and construction standpoint, should not be included in a health code. The intent of the MAHC is to address the risks associated with Aquatic Venues and the items within the facility. However, it should not try to create code language for certain items. There are no standards for the design of other equipment except where it addresses specific risk. Also those charged with enforcing the code should have sufficient knowledge to evaluate and enforce the code. Language used in this section is relative to subject matter that health departments will not have a skillset for. In most states, there is a regulatory authority that oversees amusement rides and attractions. They often utilize ASTM F24 standards. By having some of this content here, it may be in direct conflict with what ASTM F24 standards state. We do agree that how the ride interfaces with the catch pool and the vessel that holds treated water is an important risk area and should be addressed so the AHJ can enforce those portions.

MAHC Committee Response:

Agreed. Edited spelling.

Comment:

4.12.2.1.2--CHANGE #1) ASTM F2376-13; Delete # 3 (This is an obsolete document and should not be referenced.), # 4, # 5 -- So as not to create conflicts within the code, only one standard related to waterslides should be used. EN 1069 has some differences vs ASTM 2376.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.1.2--The following are recognized design and construction STANDARDs for ~~WATER SLIDE~~WATERSLIDES ~~shall be adhered to:~~ -- This makes the standard enforceable yet the AHJ may not have the skillset to enforce ASTM and all the referenced embedded standards within ASTM F24. Suggest removing the enforceability language but make reference to the standards so it is understood waterslide design is determined elsewhere and the MAHC identifies how bathers interface with the attraction.

MAHC Committee Response:

Disagree. The intent is to make the standard enforceable. Some facility owners design and construct their own slides; if there isn't a standard referenced with required compliance, then anything can be built.

Comment:

4.12.2.1.2.1--Signage ---> Required Signs: Signs indicating riding instructions, warnings, and requirements in accordance with the manufacturer recommendations shall be posted at the pool slide entry. -- This general statement is in accordance with ASTM F770. This line item should be added to the Pool slide section. Added this in a line item that was vacated.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.1.3--The structural design of a WATER SLIDE and the materials used in its construction shall conform with the required AHJ~~appropriate~~ structural engineering practices. -- Allows for compliance with local engineering requirements.

MAHC Committee Response:

Disagree. This section is intended to address structural aspects/principles of design, not local engineering requirements.

Comment:

4.12.2.1.4--Change "durable" to "Catch Pool"

MAHC Committee Response:

Disagree with proposed change. However, this section deleted as structural design is addressed in the ASTM standard F 2376 specified in Section 4.12.2.1.2.

Comment:

4.12.2.1.4--The structural design of a ~~WATER SLIDE~~WATERSLIDE CATCH POOL and the materials used in its construction shall provide a sound, durable structure that will safely sustain all the dead loads, live loads, liquid hydrostatic, and earth pressures encountered. --Structural design for waterslides is in F2376 and should not be the jurisdiction of the health department. The catch pool can function as any other aquatic venue. This statement should be moved to describe any aquatic venue construction. (The group is not aware of any waterslide manufacturer contributing to the language in this section.)

MAHC Committee Response:

Disagree with proposed change. However, this section deleted as structural design is addressed in the ASTM standard F 2376 specified in Section 4.12.2.1.2.

Comment:

4.12.2.10.1--Delete section -- This is vague, unenforceable language.

MAHC Committee Response:

Disagree.

Comment:

4.12.2.10.1.1--Delete section -- This line gives the AHJ the authority to review slide construction and that may be a skillset the health department does not have. The health department should focus on how the slide interfaces with the pool and how bathers interface with the water in that system.

MAHC Committee Response:

Disagree. This section provides the standard for design and construction.

Comment:

4.12.2.10.2--POOL SLIDES ~~are to be assembled, arranged, and~~shall ~~finished in a smooth~~have a smooth surface and shall be arranged such that landing areas do not overlap other use zones. ~~and consistent manner to inhibit the possibility of injury~~ . -- Language as written is vague and unenforceable. The smooth surface requirement is consistent with Flumes and so is left here and overlap of use zones are

MAHC Committee Response:

Disagree. Proposed change alters intent of the section. However, this section deleted as the CPSC SAFETY STANDARD FOR SWIMMING POOL SLIDES(Part 1207) addresses design criteria.

Comment:

4.12.2.10.4.1--Delete section -- Unnecessary as stair treads are addressed elsewhere. No need to be redundant as it may conflict with the language elsewhere.

MAHC Committee Response:

Agree. Section deleted.

Comment:

4.12.2.10.4.2--Delete section -- Ladders are already defined in 4.5.9.1.

MAHC Committee Response:

Agree. Section deleted.

Comment:

4.12.2.10.5--~~Handrail~~Hand rails for ladders shall extend ~~be sturdy, 1-1.9 inch outside diameter, extend~~ no more than 18 inches above the slide entrance platform~~, and designed to prevent entrapment.~~. -- Document had two spellings for Hand Rail. Sometimes one word and sometimes two. Converted all to 2 words. Moved the general ladder hand rail requirement to the appropriate area.

MAHC Committee Response:

Disagree. This section deleted as the CPSC SAFETY STANDARD
FOR SWIMMING POOL SLIDES(Part 1207) addresses design criteria.

Comment:

4.12.2.10.7--Delete section -- This is vague and unenforceable as written. It is unclear what the “clear space” is for.

MAHC Committee Response:

Disagree. Installation is to be in accordance with manufacturer's requirements.

Comment:

4.12.2.10.7.1--Change "Terminus End" to "Landing Area"

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.10.7.1--Pool slide landing areas shall comply with 4.12.2.5.6. ~~The terminus end of the slide shall be protected through the use of a float line, WING WALL, PENINSULA or other similar impediment to prevent collisions with other BATHERS.~~ -- Create consistency with similar line item in another section so as to prevent conflicts in language.

MAHC Committee Response:

Partially agree. Wording from 4.12.2.10.7.1 moved to 4.12.2.5.6 to synchronize wording.

Comment:

4.12.2.10.7.2--Netting or other ~~structures~~ barriers shall be provided to prevent BATHER access underneath POOL SLIDES where sufficient clearance is not provided. Such netting and structures shall be designed such that any opening under water does not allow for the passage of a 4 inch ball and no opening can create a finger entrapment. -- Very important to address entrapment. Netting that does not meet barrier standards could entrap a person under water.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.11.1--~~Warning signs in accordance with manufacturer's recommendations shall be provided.~~Signs shall be posted in accordance with 4.12.2.1.3. -- Added this line to the Slide Flume section and made reference to it here for consistency.

MAHC Committee Response:

Disagree. Intent is clear as is currently worded.

Comment:

4.12.2.11.1--In Heading replace "warning" with "required";

MAHC Committee Response:

Disagree. OK as is.

Comment:

4.12.2.2.2--Delete section -- These criteria are included in ASTM F2376. These criteria as stated would not be enforceable by the AHJ without the skillset to validate such items. The

requirement stating the manufacturer could allow airborne conditions is in direct conflict with ASTM F2376. Best to strike this section and rely on ASTM F2376.

MAHC Committee Response:

Partially agree. Section deleted.

Comment:

4.12.2.2.3--Delete Section -- These criteria are included in ASTM F2376. These criteria as stated would not be enforceable by the AHJ without the skillset to validate such items. The requirement stating the manufacturer could allow airborne conditions is in direct conflict with ASTM F2376. Best to strike this section and rely on ASTM F2376.

MAHC Committee Response:

Partially agree. Section deleted.

Comment:

4.12.2.2.4--Change "Dips" to "Means of Egress"

MAHC Committee Response:

Disagree. This section is intended to address more than means of egress.

Comment:

4.12.2.2.4--F~~All F~~LUMEs ~~VALLEYS and DIPS shall have proper drainage, SAFETY measures that insure a rider cannot fall from the FLUME, and a~~ shall have a means of egress in the event the ride malfunctions or a rider stops on the ride. ~~s~~. The risk is egress during ride malfunction. In some rides, the ride may stop functioning where the rider is not in a valley or dip. In which case they still need a means of egress.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.12.2.2.5--Delete section -- See comments above. This is addressed in ASTM F2376. The structural design when done in accordance with F2376 would address this risk. Ultimately the risk is to create conditions where the slide would not be structurally sound or the flume surface would injure a rider. These items can be enforced by creating code language around enforceable line items regarding smooth surfaces (already stated) and by stating it is designed and constructed to globally recognized design standards (already stated).

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.3.1--The exit of any FLUME must be designed in which ~~to ensure that~~ BATHERS enter the CATCH POOL or slide RUNOUT parallel to the catch pool side walls and the exit path does not overlap the exit path of other slides.~~at a safe speed and angle of entry.~~ -- This is not enforceable as written. Added language that enables enforcement by observations.

MAHC Committee Response:

Disagree. The bather speed and angle of entry are different issues than addressed by the proposed revisions.

Comment:

4.12.2.3.2--Delete Section -- This is addressed in the line item above. As written it is not enforceable and just allows the manufacturer to decide whatever they want. This is addressed in F2376.

MAHC Committee Response:

Disagree. However, code revised to include reference to ASTM 2376.

Comment:

4.12.2.4.1--WATER-SLIDES shall be designed to terminate at or below water level, except for DROP SLIDES or unless otherwise permitted by ~~the WATER SLIDE manufacturer.~~ASTM F2376. -- As written the manufacturer could do anything they want.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.4.2--Delete section -- For the waterslide to be perpendicular to the pool does not mean the rider will enter the pool in that fashion. The new language allows for an enforceable item where the AHJ can observe this phenomena. Moved language to 4.12.2.3.1

MAHC Committee Response:

Disagree. The proposed move to section 4.12.2.3.1 is not acceptable as the bather speed and angle of entry addressed by section 4.12.2.3.1 are different issues than addressed by the proposed revisions.

Comment:

4.12.2.4.3--Delete section -- This is a vague statement and not enforceable.

MAHC Committee Response:

Disagree. The manufacturer's recommendations and the performance criteria for safe entry must be included in the design and addressed by the design engineer. However, code revised to include reference to ASTM 2376.

Comment:

4.12.2.4.3.1--Delete Section -- Another vague and unenforceable statement. Alternative methods are addressed in F2376

MAHC Committee Response:

Partially agree. Section deleted as section 4.12.2.4.3 already addresses the issue.

Comment:

4.12.2.4.4--Delete section -- This leaves it wide open for the manufacturer to do whatever they want and is therefore unenforceable.

MAHC Committee Response:

Disagree. However, code revised to include reference to ASTM F2376.

Comment:

4.12.2.4.5--Delete section -- This leaves it wide open for the manufacturer to do whatever they want and is therefore unenforceable.

MAHC Committee Response:

Disagree. However, code revised to include reference to ASTM 2376.

Comment:

4.12.2.5.5--If steps are provided, they shall be installed at the opposite end of the catch pool from the flume exit and a hand rail shall be provided. ~~instead of exit ladders or RECESSED STEPS with grab rails, a handrail shall be provided at the steps opposite the point of exit from each FLUME.~~ -- Reworded to be more clear.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.12.2.5.6--If the ~~WATER SLIDE~~WATERSLIDE FLUME ~~shall~~ ends in a swimming POOL, the landing area shall be divided from the rest of the AQUATIC VENUE by a float line, WING WALL, PENINSULA or other similar feature to prevent collisions with other BATHERS. ~~or as approved by the AHJ.~~ -- Provide an alternate means consistent with pool slides.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.8.1--~~WATER SLIDE~~WATERSLIDE RUN-OUTS, if used, shall have a planned means of egress, unless one ~~or both~~ of the walls of the RUN-OUT is~~are~~ not more than 19~~2~~ inches (0.48~~0.3~~ m) in height.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.8.2--Delete Section -- Vague and unenforceable language.

MAHC Committee Response:

Disagree. However, code revised to include reference to ASTM 2376.

Comment:

4.12.2.9.1--Delete section -- Unnecessary and redundant with language applicable to slides in general.

MAHC Committee Response:

Disagree. However, code revised to include reference to ASTM 2376.

Comment:

4.12.2.9.2--Delete section -- Unnecessary and redundant with language applicable to slides in general.

MAHC Committee Response:

Disagree.

Comment:

4.12.2.9.3--delete section -- Unnecessary and redundant with language applicable to slides in general.

MAHC Committee Response:

Disagree.

Comment:

4.12.2.9.4--The minimum required water depth shall be ~~a function of the slide drop height above the water surface.~~determined by the manufacturer as a function of the drop height and the path of entry to the catch pool. -- Create consistency with language in slide pools below.

MAHC Committee Response:

Partially agree. Code revised to use language consistent with ASTM 2376.

Comment:

4.12.2.9.5--Delete section -- Consolidated language in line item above.

MAHC Committee Response:

Disagree. However, code revised to include reference to ASTM 2376.

Comment:

4.12.3.2.1--BATHERS must gain access to the WAVE POOL at the shallow or beach end with the exception of allowable ADA designated entry. -- ADA requires accessible entry and may be a ramp separate from the zero depth entry.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.3.2.2--Delete section -- Hand holds should not be included in wave pools or any pools with wave action and currents. During wave action, a person using a hand hold can injure themselves and others. Also to provide a handhold in a wave pool would facilitate a non-swimmer to access deep water and when wave action occurs, can be dislodged and pose an increased risk of drowning. Hand holds would protrude into the pool or if recessed, not function well as a handhold.

MAHC Committee Response:

Disagree. Code sections 4.12.3.2.2.3 Flush and 4.12.3.2.2.4 Entangled, address safety concerns.

Comment:

4.12.3.2.2.1 through 4.12.3.2.2.4--Delete all sections

MAHC Committee Response:

Disagree. Handhold section not deleted as proposed in separate comment.

Comment:

4.12.3.2.5--Delete section -- This has been exempted in the edits of 4.5.4.1 and 4.5.4.3. There is no 4.5.4.1.2

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.5.1.2--~~Handrail~~Hand rails, steps, stairs and propulsion jets for LAZY RIVERS shall not protrude into the path of the water flow of the river . -- Most rivers have stairs entering the river but are not in the path of the water flow.

MAHC Committee Response:

Disagree. Less ambiguous as currently stated.

Comment:

4.12.5.2.1--Delete section -- The 150' egress/access requirement is unnecessary, does not improve safety, creates additional blockages in the Lazy River flow, creates additional opportunities for tubes to flip over, creates additional expense, etc. The Annex did not set forth any justification for this requirement. Lazy River water depth is such that almost all users can safely walk, if necessary. Additionally, bathers are on inner tubes which require little or no physical effort and can easily float on the inner tube until an exit is reached.

MAHC Committee Response:

Disagree. Annex provides rationale for the distance requirement.

Comment:

4.12.5.2.2--Delete section -- Handholds should not be required in a Lazy River. These are shallow pools which can be walked by most bathers. Bathers ride on an inner tube and do not expend much physical effort. Handholds will only result in a number of bathers grabbing them, impeding the flow of the River, causing tubes to jam together with increased risk of flipping over in a mass of tubes. This is an extremely bad idea for this type of aquatic venue.

MAHC Committee Response:

Disagree. The intent was to have it along the length of the river, either on the inside perimeter, outside perimeter, or both. Because of their generally narrow width, most are in skimmer pools,

so the coping +6” above the water level serves this requirement. But there are still many in gutter pools where there is a tiled handhold in front of a gutter.

We defined narrower rivers (less than 8 ft. in width) as current channels. This 8 ft. wide dimension usually determines the minimum clearance for inner tubes to be used somewhat comfortably. There are many “current channels” at municipal indoor rec pools because space is such a premium. There is concern about bathers who venture from one area of a pool into the mouth of a current channel and being caught off-guard by the pace of the current with nothing to grab ahold of. And even if most are shallow enough to stand, some have a velocity that make standing fairly difficult.

Comment:

4.12.5.2.3--Delete section -- There is no rationale for having a deck along the entire length. The entries and exits are at specific locations and decks should be available at those locations but a deck along the entire length would be excessive. Part of the ambiance of a lazy river is the landscaping around the river.

MAHC Committee Response:

Disagree. The deck is intended to provide for lifeguard positioning and access.

Comment:

4.12.5.2.3.1--Delete section

MAHC Committee Response:

Disagree. The deck is intended to provide for lifeguard positioning and access.

Comment:

4.12.7.10--The width of the walkable area (total BULKHEAD width) of a BULKHEAD shall be greater than or equal to 36 inches (Xm) ~~feet and 3 inches (1.0 m)~~ . -- Allows for competition pools that are not metric.

MAHC Committee Response:

Disagree. See Annex for rationale.

Comment:

4.12.7.10.1--If starting platforms are installed, the width of the walkable area (total BULKHEAD width) of a BULKHEAD shall be greater than or equal to 3 feet and 9 inches (1140 mm). Starting platforms shall be “sidemount” style if bulkhead is less than 4 ft 6 inches wide. -- Maximizes the space behind the starting platforms on a smaller bulkhead.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.7.6--The gap between the BULKHEAD and the POOL wall shall be no greater than 1.5 inches (38 mm). -- Defines where the gap should be located.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.8.4.2--Fully submerged d~~D~~irect suction outlets from the INTERACTIVE WATER PLAY VENUE shall be prohibited unless they meet the requirements of the VGB Act. ~~.~~ -- Adds clarity to addressing the risk.

MAHC Committee Response:

Disagree. No change necessary. Interactive Water Play Venues must be designed to prevent standing water in the venue and have gravity drains. Direct suction from the drain outlets is prohibited and not feasible.

Comment:

4.12.8.7--~~Eight feet (2.44 m) of DECK area shall be provided between a INTERACTIVE WATER PLAY VENUE and any landscaped area unless the landscaping is elevated above the DECK in a planter.~~INTERACTIVE WATER PLAY VENUES shall be kept free of landscape debris by either (1) eight feet (2.44 m) of DECK area or (2) raised curbs or (3) raised planters. -- Creates flexibility in the options but achieves the same effect.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.8.8--Delete section -- It is unknown what the barrier would consist of. There is no rationale to support the need for such barrier. An interactive Water Play Venue is a low risk for drowning and it should be open for any patron to access. If there is a particular risk with the adjacent pool, then it should be identified as the reason why a barrier is needed for THAT pool and not for the Interactive Water Play venue.

MAHC Committee Response:

Disagree. Interactive water play venues are designed for and used by young children. The intent is to prevent direct access from an Interactive water play venue to other bodies of water and focuses on the area where the young children will be congregated.

Comment:

4.12.8.9--If a facility only consists of a INTERACTIVE WATER PLAY VENUE, then the requirements for a barrier ~~n ENCLOSURE~~ shall not apply.

MAHC Committee Response:

Disagree. Enclosure is correct, meaning that facility perimeter fencing is not required.

Comment:

4.12.9.2.1--Remove small caps from "enclosure" throughout the document

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.2.--There is a misnumbering starting here.

MAHC Committee Response:

Disagree. No misnumbering apparent.

Comment:

4.2.1.2.1--Delete section -- Not relevant to the section. This is addressed in pool finishes.

MAHC Committee Response:

Partially agree. Code revised for clarity.

Comment:

4.2.1.2.3.1--Permission in writing from the AHJ for the use of graphics that do not comply with the requirements of this code shall be obtained before the graphics are used. -- Graphics may already comply and this would be unnecessary.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.2.1.4.4--If dark colors in excess of what is required in this code are utilized for the POOL finish, these colors shall not exceed a maximum height of 12 inches (300 mm) below the waterline. -- Refers to the established minimum.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.2.1.6--Stainless steel, v~~V~~inyl , PVC-P, or PVC panel and liner POOL finish systems shall be acceptable provided that the system is installed on top of approved materials and design requirements as listed within this section or approved by the AHJ. -- Added to allow for these types of pool surfaces.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.2.2--~~Natatorium~~Indoor aquatic facility -- change all instances

MAHC Committee Response:

Agree. Code revised.

Comment:

4.2.2.2.1--~~NATATORIUM~~INDOOR AQUATIC FACILITY building envelope construction shall include a vapor-retarder/insulation arrangement to assist in preventing the condensation of water on inside building surfaces under the coldest outdoor conditions based on the ASHRAE climate data for the project locale or nearest reporting city and the highest design indoor relative humidity.

MAHC Committee Response:

Agreed. Edited throughout code and annex.

Comment:

4.2.2.2.2--Where a paint or coating serves as the vapor retarder of a ~~NATATORIUM~~INDOOR AQUATIC FACILITY, the paint or coating shall be applied so as to produce a permeability rating of 0.2 U.S. perm (11.4 ng·s−1·m−2·Pa−1) or less. -- change "natatorium" to "indoor aquatic facility" throughout the MAHC

MAHC Committee Response:

Agreed. Edited throughout code and annex.

Comment:

4.3.1.1--Where applicable, all equipment used or proposed for use in AQUATIC FACILITIES governed under this CODE shall be of a proven design and construction and shall be ~~listed by~~compliant with either NSF International, Underwriters Laboratories or another ANSI-accredited certification organization for the specified equipment use. -- Provides clarity

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.5.10.3--Trench drains shall be used along ZERO DEPTH ENTRIES at the waterline to facilitate surface skimming. The trenches may be flat or follow the slope of the ZERO DEPTH ENTRY and may terminate up to 24 inches from the vertical pool wall . -- Allows for smooth transition to the vertical pool wall during construction.

MAHC Committee Response:

Disagree. Construction with respect to this item, is done in accordance with the code quite frequently.

Comment:

4.5.10.3--Trench drain slots shall run parallel to waterline or opening shall be no more than 1/2" in size. Any handholds that present a trip hazard shall not be continuous along the ZERO DEPTH ENTRY. -- To facilitate wheelchair entry.

MAHC Committee Response:

Disagree. Some designers believe that parallel grating performs superior to perpendicular in terms of capturing water into the gutter immediately and not letting it bridge onto the deck, but have indicated that it is relatively new to the industry, is more difficult for maintenance, and there have been reportedly significant widespread manufacturing issues recently.

Comment:

4.5.12.1.2--An exception shall be made for the following AQUATIC VENUE components:

1) Competitive lane markings,
2) Dedicated competitive diving well floors,
3) Step or bench edge markings,
4) POOLS shallower than 24 inches (0.6 m), or
5) Other approved designs
6) Water line tiles
5)7) Wave Pool and Surf Pool depth change indicator tiles.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.15.5--The overhang for coping or cantilevered DECKing shall not exceed 3~~2~~.5 inches (64 mm) in thickness for the last 2 inches (50 mm) of the overhang. -- The "regular" stegmeier form which is used frequently in pool design has a grip thicness of 3.5 "

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.16.3--how would the infinity edge handhold be designed? Seems to require C701 at the edge, although the annex seems to state otherwise. "INFINITY EDGES can be accomplished with an obtuse angle or knife edge, or even a C701
handhold. It is typically submerged a fraction of an inch."

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.5.2.2--Add punctuation to the end of the sentence… (NOTE TO LAINA:)also, check all sentences for ending punctuation

MAHC Committee Response:

No change. Cannot see that punctuation is missing.

Comment:

4.5.2.3--In water depths 5 foot and greater, the slope of the floors of all POOLS shall not exceed 1 foot (0.3 m) vertical to 3 feet (0.9 m) horizontal, except ~~that~~ for surf pools and POOLS designed and used for competitive diving shall be designed to meet the STANDARDs of the sanctioning organization (such as NFSHSA, NCAA, USA Diving or FINA).

MAHC Committee Response:

Partially agree. Surf pools and "Special Use Venues" have been defined and design requirements for "Special Use Venues" (which includes surf pools) has been addressed in section 4.5.

Comment:

4.5.20.4.1--For POOL water depths 5.0 feet or shallower, all deck depth markers required by MAHC section 4.5.20 above shall be provided with “NO DIVING” warning signs along with the universal international symbol for “NO DIVING” spaced at not more than 25 foot (7.6 m) intervals around the POOL perimeter edge. Reference: *NEMA Z535 -- Clarifies these no diving markers are not required on the vertical wall.*

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.20.4.2 & 4.5.20.4.3--Add quotation marks around "No Diving Markers"

MAHC Committee Response:

Agree. Quotation marks already present.

Comment:

4.5.20.5.3--One foot (0.3 m) to the shallow water side of the break in floor slope and contrasting band, a SAFETY float rope shall extend across the POOL surface with the exception of wave pools, surf pools, and waterslide catch pools~~.~~ -- Putting a safety rope into a pool with active currents and waves would create a safety hazard in which bathers could be “clotheslined” by the rope.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.20.7--~~Controlled access AQUATIC VENUES such as an ACTIVITY POOL, LAZY RIVERS, etc. do not require depth markers but the depth shall be indicated on a sign at the entry to such an AQUATIC VENUE.~~ AQUATIC VENUES such as waterslides, LAZY RIVERS, etc. with limited access only require depth markers at points of entry on a sign. Depth marker sign shall be clearly visible to patrons entering the venue. All lettering and symbols shall be as required other types of depth markers. -- Clarifies that the lettering and symbols should be consistent.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.20.8--Delete Section -- The risk for a small spa is the same as for a big spa. Users should know the depth and know not to dive into the spa.

MAHC Committee Response:

Agree. Section deleted.

Comment:

4.5.20.9--AQUATIC VENUES such as wading POOLS and water activity areas or other AQUATIC VENUES are not required to have depth markings or no diving signage where the ~~if~~ maximum water depth is 6 inches (15 cm) of water or less. -- Clarifies for pools where the depth varies. This would require the markers in areas where the water depth exceeds 6 inches.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.4.1--Each POOL shall have a minimum of two means of access and egress with the exception of:
1) waterslide catch pools,
2) waterslide runouts,
3) wave pools
4) zero depth entry pools where the zero depth access width is larger than 2 times the width of a standard method of egress.
5) Aquatic venues smaller than 1000 square feet of surface area -- Waterslides are exempt of ADA and by their nature only have one means of egress so bather traffic does not cross the path of the slide exit. Runouts are narrow but often have a wide area for egress. Wave Pools should only allow access through the zero depth entry and this is usually a wide area as well. Small venues would not need two means of egress.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.5.4.3--For POOLS wider than 30' (9.14 m), such means of access / egress shall be provided on each side of the POOL.~~, not more than 75' (22.9 m) apart.~~ -- This is not clear as to how it is measured and one could interpret that multiple means of access are required 75 ft apart.

MAHC Committee Response:

Disagree. It is the intent to provide multiple means of access/egress for pools wider than 30 feet and that those means of access/egress be no more than 75 feet apart.

Comment:

4.5.5.6 Table--SEE CODE FOR TABLE -- The tables seems to be in conflict with 4.5.5.4

MAHC Committee Response:

Agree. Table revised.

Comment:

4.5.6--Hand rail is TWO words

MAHC Committee Response:

Partially agree. Typically spelled as one word. Code revised to make spelling consistent throughout.

Comment:

4.5.6.5--Delete section -- Hand rails would have to comply with the 2010 ADA. Not necessary to mention here.

MAHC Committee Response:

Disagree. The Annex provides an explanation and indicates that these parameters are intended to address the necessary structural requirements which are not addressed in ADA.

Comment:

4.5.6.5.1, 4.5.6.5.2, 4.5.6.5.3--Hand rails shall be designed to resist a 50 pounds (22.7 kg) per linear foot load applied in any direction and independently a single concentrated load of 200 pounds (90.7 kg) applied in any direction at any location. Hand rails shall be designed to transfer these loads through the supports to the pool or deck structure.~~Hand rails shall be designed to resist a load of 50 pounds (22.7 kg) per linear foot applied in any direction at the top and to transfer this load through the supports to the POOL or DECK structure --~~ 4.5.6.5.1, 4.5.6.5.2 and 4.5.6.5.3 should all be combined into a single section, which is NOT a subsection of 4.5.6.5. NEW SECTION # 4.5.6.6

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.6.6--Numbering changes

MAHC Committee Response:

Agree. Renumbered based on previous changes.

Comment:

4.5.8.5 Table--See code for table -- Allow for maximum dimensions H-2 (recommend 6"), W-1 (recommend 17") and D-1 (recommend 6").
The table indicates has absolute dimensions and does not account for steps that are regularly used and available on the market. Currently, injection molded steps are typically 16 1/2" x 6" x 5 1/2" and stainless steel inwall steps are 5" h x 5" d x 15".

MAHC Committee Response:

Disagree. The table doesn't indicate absolute dimensions, it lists minimum dimensions. It is not clear what the rationale is to prescribe maximum dimensions.

Comment:

4.5.8.6--4.5.9.3.3 ladder tread spacing conflicts with these dimensions.

MAHC Committee Response:

No change proposed by commenter. No change to be made at this time without supporting rationale.

Comment:

4.5.9.2.1--Ladders shall have two hand rails. Hand rails for ladders shall be sturdy, 1-1.9 inch outside diameter -- This requirement was in ladders for pool slides. This should be in the general ladder hand rail requirements.

MAHC Committee Response:

Disagree. No change. Code has been revised to delete the pool slide ladder specifications.

Comment:

4.5.9.2.4--The clear space between hand rails and the POOL wall shall be not less than 1.5~~3~~ inches (xx~~76~~ mm) and not more than 4~~6~~ inches (xx~~152~~ mm). -- More than 4 inches poses an entrapment hazard. 1.5 inches is a common dimension that has not been recorded to create risk.

MAHC Committee Response:

Disagree. 1.5 inches could pose a pinch hazard with fingers that routinely grab the handrails as patrons enter the pool. Anthropometric charts were reviewed in establishing the current allowable range.

Comment:

4.5.9.2.5--Ladders shall be designed to resist a load of 50 pounds (22.7 kg) per linear foot applied in any direction. ~~at the top~~. -- Should be along the entire rail.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.9.2.7--Ladders shall also be designed to resist a single concentrated load of 200 pounds (90.7 kg) applied in any direction ~~along the top~~ . -- Should be along the entire rail

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.1.3.1--POOL water surface and DECK light levels shall meet the following minimum maintained light levels*:

1) Water Surface - 6 horizontal footcandles (___ lux)
2) DECK - 3 horizontal footcandles (___ lux)

Note: These are minimum lighting levels and accounts for lighting conditions used for creating ambiance. Higher levels may be advisable for acceptable spectator viewing for competitive swimming and diving events. -- POOL water surface and DECK light levels shall meet the following minimum maintained light levels*:

1) Indoor Water Surface - 630 horizontal footcandles (320 lux)
2) Outdoor Water Surface - 10 horizontal footcandles (100 lux)
3)2) DECK - 310 horizontal footcandles (100 lux)

Note: These are minimum lighting levels and accounts for lighting conditions used for creating ambiance. Higher levels may be advisable for acceptable spectator viewing for competitive swimming and diving events. -- The risk factors are trip and fall hazards on the deck, the ability to see a person in distress in the pool and the ability to execute a rescue. Using that rationale, the lighting at the pool surface and pool deck should be the same regardless of environment. The requirement at the deck is based on OSHA requirements for work areas. The FL state code is currently 3 footcandles at the water. The requirement at the water surface is suggesting a 50% increase of FL state code. These levels appear to be arbitrary and excessive. For example, 10 footcandles is typically required in model codes for emergency egress lighting intended to mitigate against smoke-filled corridors. Moreover, such lighting could be counterproductive since having sufficient overhead lighting to meet the requirement would cause glare issues. Finally, this requirement would create significant energy waste and cost without any corresponding demonstrable benefit.

MAHC Committee Response:

Disagree. The minimum light level requirements are to address safety not ambiance issues. The Annex contains the rationale and indicates that the minimum light levels are as recommended in the Illuminating Engineering Society of North America (IESNA) RP-6-88, “Recommended Practice for Sports and Recreational Area Lighting” for the recreational class of use.

Comment:

4.6.1.5.1--Underwater lighting where provided shall be ~~of~~ not less than 6 initial rated lumens per square foot of POOL water surface area shall.~~ll be provided~~.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.10.2.1--The additional width shall be based on the egress requirements in the applicable building CODE based on the ~~maximum OCCUPANT LOAD~~THEORETICAL PEAK OCCUPANCY of the aquatic facility served with a minimum width of 4 feet (1.2 m) and have either of the following: -- Create consistency with term.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.2.6.2--Replace all references to "Maximum bather load" with "Theoretical Peak Occupancy", and replace "building occupants" with "deck spaces"

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.2.7.11.1--The AIR HANDLING SYSTEM shall have a PURGE rate in which the system brings in ~~capacity equal or greater than 2 times the ASHRAE CODE level~~ outdoor air at the same rate required for theoretical peak occupancy until one complete air exchange of the indoor aquatic facility air volume has been achieved . This PURGE would be activated manually and run for a time that achieved one complete air turn of the space. -- This creates consistency in the document. The doubling of the ASHRAE level is in conflict with the definition of purge in the code. The definition of purge was the intent of the ventilation technical committee.

MAHC Committee Response:

Disagree.

Comment:

4.6.2.7.2--The AIR HANDLING SYSTEM design shall provide system features to notify the operator if the outdoor air flow rate entering the indoor AQUATIC FACILITY is below 0.48 cubic feet per minute per square foot. ~~fm/ft2.~~ -- Clarify this is a flow rate.

MAHC Committee Response:

Agree

Comment:

4.6.2.7.3--Design of the AIR HANDLING SYSTEM shall meet the ~~maximum BATHER/PATRON~~ requirements for the number of cfm/sq ft based on the theoretical peak occupancy of the aquatic facility ~~requirements~~, however, if a method to determine real-time actual occupancy is available then the system may modulate to reduce outdoor air cfm to meet the requirement for the actual occupancy for the associated time frame. -- Clarify that design is based on TPO.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.2.7.6--Delete section -- Please note that the relative humidity requirements of ASHRAE requires 50-60% RH. In indoor waterparks with agitated water, the humidity is higher than indoor flat water pools. There is no evidence to state that 60% should be the maximum. Mold growth and rusting is triggered at 65% or more and the condition must exist for enough time for mold to grow and for rust to form. But with management of dew point and with air movement, that risk can be avoided. Higher humidity levels allows for heat retention and energy efficiency as many 100% outdoor air systems are used for that purpose. When outdoor air is at a humidity level higher than 60%, then ALL systems would have to be designed for mechanical dehumidification. This would surely benefit those suppliers of such equipment. It would be best to strike this requirement and rely on dew point.

MAHC Committee Response:

Comment not considered as it came in late.

Comment:

4.6.3.2.2--Electrical conduit shall not enter or pass through an interior CHEMICAL STORAGE SPACE, except as required to service devices integral to the function of the room, such as pumps, vessels, controls, lighting and SAFETY devices or if the conduit is sealed and made of

materials that will not interact with any chemicals in the chemical storage space.. -- PVC conduit should be allowed. In small spaces allowing the passage of conduit is necessary.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.5.1--Design and construction of new AQUATIC FACILITIES shall include an area ~~designated~~ for first aid equipment and/or treatment.

MAHC Committee Response:

Disagree. Annex contains explanation and rationale.

Comment:

4.6.6.2--~~Unless all gates or doors are so equipped, those gates~~Gates and/or doors which will allow egress without a key shall be clearly and conspicuously labeled in letters at least 4 inches (10cm) high "EMERGENCY EXIT."

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.8.3--Receptacles shall be designed to be ~~tightly~~ closed with a lid or other cover so they remain closed until intentionally opened. -- Tightly is a relative term. Also change header/key word

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.10 Table--Remove plunge pools as this definition no longer exists. Add “surf pools” to wave pools. Unnecessary to show what States have these values. Add pools intended for use by children under the age of 5. Would prefer to use 5 gallons per minute per bather when calculated as TPO. Turnover times do not account for volumes.

MAHC Committee Response:

Partially agree. Edited

Comment:

4.7.1.10.1--~~All AQUATIC VENUES shall comply with the following maximum allowable TURNOVER times show in MAHC Table 4.7.1.10: "Maximum Allowable Turnover Times."~~Aquatic venue recirculation systems shall have a flow rate of at least 5 gallons per minute per bather based on the THEORETICAL PEAK OCCUPANCY of the aquatic venue where the minimum density is per MAHC 4.1.2.3.5.1. For aquatic venues with anticipated higher densities of bathers, a more conservative density factor may be used by the design/engineer to increase flow rate to account for the additional bathers. -- Water quality is driven by peak bather loads. Very deep pools would have many more gallons of water to each person. Having a turnover rate which is the same for a high water volume pool and a relatively low water volume pool solely because they are similar in type does not make sense. It is burdensome from a construction standpoint and does not necessarily improve water quality. Addressing the bathers in the pool based on the anticipated density makes more sense and is quantifiable.

MAHC Committee Response:

Disagree. No change at this time. A significant change such as this needs additional stakeholder input. A workgroup will be established by the CMAHC to address this issue (turnover rates) and bring recommendations for a code change to the 2015 CMAHC conference.

Comment:

4.7.1.10.1--Delete "Maximum Allowable" and Replace with "Minimum Flow Rate"

MAHC Committee Response:

Disagree. The table addresses turnover times (hours), it does not list flow rates (gpm).

Comment:

4.7.1.10.2.1--Delete section -- Water that isn't filtered wouldn't be considered under this code so it should not be included.

MAHC Committee Response:

Disagree. This section is to address/clarify water that may be withdrawn from and returned to the pool for such items as slides, features, etc. by a pump separate from the filtration system, that flow rate from the separate pump system shall not be included in the turnover time calculation.

Comment:

4.7.1.10.4--Delete Section -- Redundant

MAHC Committee Response:

No change. Intended to assure clarity of intent.

Comment:

4.7.1.10.4.1--Delete section -- Filtration flow rate should be determined by number of bathers and not by pool type regardless of volume.

MAHC Committee Response:

Disagree. No change at this time. A significant change such as this needs additional stakeholder input. A workgroup will be established by the CMAHC to address this issue (turnover rates) and bring recommendations for a code change to the 2015 CMAHC conference.

Comment:

4.7.1.10.5--Delete section -- This is already required in another section of the code. 4.7.3.3.2.4

MAHC Committee Response:

Partially agree. This section specifies where the secondary disinfection system must be located in the recirculation system and is not addressed in Section 4.7.3.3.2.4. However, code revised to move this section requirement to the Secondary Disinfection System section.

Comment:

4.7.1.10.5.1--Delete section -- This does not seem to be relevant to secondary disinfection.

MAHC Committee Response:

Agree. Code revised and renumbered.

Comment:

4.7.1.2.2--If SECONDARY DISINFECTION is required for an ~~INCREASED RISK~~ specific AQUATIC VENUE as per MAHC Section 4.7.3.3.1.2, then SECONDARY DISINFECTION shall be required for all treatment systems that are combined with the ~~INCREASED RISK~~ specific AQUATIC VENUE.

MAHC Committee Response:

Disagree. An INCREASED RISK AQUATIC VENUE is a specific and defined aquatic venue.

Comment:

4.7.1.2.3--When multiple AQUATIC VENUES are combined in one treatment system, e~~E~~ach AQUATIC VENUE ~~of a combined venue treatment system~~ shall be capable of being isolated for maintenance purposes. -- There was no definition for a combined venue

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.4.1.1.1--For POOLS that require a perimeter overflow system, the POS shall extend around the entire POOL perimeter, except where noted in this code. -- There is an exception for wing walls and peninsulas.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.4.4.1.1--Surge shall be provided within a surge tank, or the gutter or filter above the normal operating level~~flow line~~, or elsewhere in the system. -- Flow line is not defined.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.4.5.1--Gutters shall be level within a tolerance of plus or minus 1/4~~16~~ inch (xx~~1.6~~ mm) around the perimeter of the AQUATIC VENUE. -- The 1/16" tolerance is not practical in pool construction. This change creates consistency with 4.7.1.5.5.1

MAHC Committee Response:

Disagree. This tolerance is practical in construction and +/- 1/4 inch can result in a 1/2 inch difference in elevation which will result in inefficient full perimeter skimming. Consistency with Section 4.7.1.5.5.1 is not necessary, as there is much more flexibility in operating water levels for skimmers while maintaining adequate surface skimming.

Comment:

4.7.1.5.1.2.1--Comment only: there are no requirements for equalizer lines or automatic fill to maintain constant flow through a skimmer. The skimmer is the primary source for filtered water but there is not a requirement to maintain flow through skimmers.

MAHC Committee Response:

Agree. The Operation & Maintenance section 5.7.1.4.3 has been revised. The Design Section for skimmers does not mandate an automatic fill device for skimmer pools because of the greater range for the operating water level.

Comment:

4.7.1.5.4.2--Delete section -- Most construction does not separate the individual skimmers on a suction line and yet can still achieve even distribution. This seems to be a requirement beyond standard industry practice.

MAHC Committee Response:

Disagree. The trimmer valve is a component within the skimmer that allows for adjustment of flow.

Comment:

4.7.1.5.6.1--Delete section -- Flotation test is not defined. Also, this is an operational requirement, not a design requirement.

MAHC Committee Response:

Partially agree. It is an operational item and is addressed in section 5.7.1.4.6.; therefore, code revised to delete inclusion in Section 4. The Annex contains a description/ instructions for conducting the test.

Comment:

4.7.1.6.2.1.2--The outlets shall be connected to a single main suction pipe by branch lines piped in parallel to provide hydraulic balance between the drains. -- This clarifies the intent since the branch lines cannot be valved as per 4.7.1.6.2.1.3.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.6.4.2--Delete section -- There are several conflicts in this section. The skimmer section says trimmer valves are needed on each skimmer to adjust flow. Another line says branch lines cannot have valves so the branches do not operate independently. And this line says a proportioning valve is necessary. Is the intent to adjust flow in the individual parts of the system or not? I have deleted each line with the intent the steering committee will resolve these items and if not resolved, leave these lines out altogether so as not to create conflicts.

MAHC Committee Response:

Disagree. There are no conflicts. Section 4.7.1.6.4.2 addresses the relative flow distribution between the main drain system flow and the surface skimming system flow. Section 4.7.1.6.2.1.3 indicates that the individual branch lines within the main drain suction pipe system, must not be valved so as to be able to operate independently. Section 4.7.1.5.4.2 indicates that trimmer valves are required within the skimmer so as to be able to adjust flow between each skimmer in the surface skimming system.

Comment:

4.7.1.7.1.2--Piping and piping system component materials shall be suitable for potable water contact and shall meet NSF/ANSI STANDARD 14, NSF/ANSI STANDARD 50, and NSF/ANSI STANDARD 61 ~~and NSF/ANSI STANDARD 14~~ as applicable. -- NSF 50 is applicable. Also, change standard to all lower case, no small caps

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.7.3.2--Provisions shall be made for complete drainage of all POOL piping ~~for winterization~~ . -- Not necessary to indicate winterization as pipe draining is necessary for other tasks. Can mention in the annex.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.7.5.2--~~New and renovated suction~~Suction and supply POOL piping shall be able to maintain the greater of the two following amounts of pressure: -- The entire section 4 on Design and Construction is applicable to those venues and facilities built after the adoption of the code so it is unnecessary to indicate “new and renovated” otherwise one may interpret that the remaining items within section 4 are applicable to all facilities that currently exist.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.8.2.7--All recirculation pumps shall meet the minimum NPSH requirement for the system. -- The NPSH is determined by system design.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.8.3.1--Delete section -- Excluding vacuum pumps and vertical turbines, this requirement is not valid for many types of pumps.

MAHC Committee Response:

Disagree. A vacuum gauge is important to enable monitoring for possible restrictions, such as a clogged hair strainer basket, on the suction side of the pump.

Comment:

4.7.1.9.1.1--Delete section -- There is only one NSF 50 listed flowmeter and its max capacity is not sufficient for 90% of commercial pools.

MAHC Committee Response:

Disagree. The standard exists for evaluation, listing and labeling.

Comment:

4.7.2.3.2.3--~~The filtration surface area shall be calculated as the measured surface area of the septum plus 1/8 inch layer of precoat media.~~The filtration surface area shall be based on the outside surface area of the media with the MANUFACTURER'S RECOMMENDED THICKNESS OF PRECOAT MEDIA". -- Just as a sand filter surface area changes if the incorrect level of media is provided. Why set an arbitrary thickness of media that may not apply to each filter design?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.2.8.1--Where chemical feeders are used for pH and disinfectants, AUTOMATED CONTROLLERs shall be installed for MONITORING and for turning on and~~or~~ off a chemical feeder. ~~at all AQUATIC VENUES. --~~ Clarify that an automated controller is not needed for other chemicals fed through feeders such as clarifiers or flocculants. It also clarifies that not all chemicals require a feeder.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.2.8.3--Operation manuals or other instructions that give clear directions for cleaning and calibrating AUTOMATED CONTROLLER probes and sensors shall be provided in ~~the same room~~ close proximity to ~~as~~ the AUTOMATED CONTROLLER. -- Some rooms are very large and some controllers may not be in a room, but rather, outdoors.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.1.2--Delete "increased risk" and in 1) change "diaper-aged children" to "children less than 5 years of age."

MAHC Committee Response:

Disagree. An INCREASED RISK AQUATIC VENUE is a specific and defined aquatic venue. DIAPER-AGED CHILDREN is also a defined term.

Comment:

4.7.3.3.2.2--The SECONDARY DISINFECTION SYSTEM shall be located in the treatment loop (post filtration) and treat ~~a portion (up to 100%)~~at least the required ~~of the~~ recirculation flow as defined herein prior to return of the water to the AQUATIC VENUE or AQUATIC FEATURE. -- This is more definitive as the previous language would allow 1% of the recirculation flow to be treated.

MAHC Committee Response:

Disagree. The required minimum flow rate through the secondary disinfection system is specified in Section 4.7.3.3.2.4.

Comment:

4.7.3.3.2.7.1--The flow rate shall be as defined in MAHC Section 4.7.3.3.2.5~~6~~. -- Reference correction

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.3.4--Delete section -- This statement is unnecessary as the facility would have to comply anyway.

MAHC Committee Response:

Agree. Section deleted.

Comment:

4.7.3.3.3.7--Delete section -- The AHJ won't have jurisdiction over the manufacturer. There is already a requirement for specific equipment to be certified to certain standards in order to be used.

MAHC Committee Response:

Disagree. No change made as section 4.7.3.3.3.7.1 includes methods to determine compliance with the intent of this requirement.

Comment:

4.7.3.3.3.8--The automated shut down of the UV equipment for any reason shall initiate a visual alarm or other indication which will alert staff. ~~on-site or remotely.~~ -- Doesn't matter whether onsite or remote but that staff is alerted so they can take action.

MAHC Committee Response:

Partially agree. However no change made as including "on-site or remotely" will avoid potential confusion as to acceptable location for the alarm.

Comment:

4.7.3.3.3.8.1--Delete section -- This is an operational requirement. It is also unnecessary since an alarm is required per the line above. Patrons should not have this responsibility.

MAHC Committee Response:

Disagree. The requirement to provide signage is included in several other sections within Design and Construction.

Comment:

4.7.3.5.1--Delete section -- Commonly used and accepted test kits including Taylor, are not NSF certified. This would create a burden for facilities and for AHJs.

MAHC Committee Response:

Disagree. Because the MAHC is a model code, with requirements to protect public health, requirements for product certifications and other specifications should be included independent of actual product availability. It is up to the local jurisdiction that adopts the code as to when they implement certain parts, and of course no one would enforce a regulation for certified products if there are none available.

If there are no requirements in the code for NSF 50 Certified test kits, then jurisdictions will not adopt the requirements and no manufacturers will likely bother to get their test kits evaluated and certified. If on the other hand requirements are kept in the code, jurisdictions will adopt it and facilities will start to specify NSF 50 and the manufacturers will improve their products so they can be certified to NSF 50.

Comment:

4.7.4--Intentional Water Discharge ~~Replenishment System~~

MAHC Committee Response:

Disagree. Water Replenishment System is a defined term.

Comment:

4.7.4.1--Delete section -- Unnecessary as it is already stated elsewhere. Also it is likely the waste would be discharged in accordance with local law.

MAHC Committee Response:

Agree. Section deleted.

Comment:

4.7.4.2--A means of intentionally discharging ~~and measuring the volume of both discharged~~ AQUATIC VENUE water ~~and filter backwash wastewater (or alternate means of achieving the same result)~~ shall be installed to maintain total dissolved solids levels and reduce the amount of organic compounds in the water.~~.~~ -- The means of intentionally discharging water can be done through backwash. Requiring a measuring device is burdensome. Flowmeters are not as accurate in all installations. Knowing pump gpm and knowing how much time one is backwashing would suffice. One may infer that additional equipment is necessary, which is an unnecessary financial burden.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.7.4.2.1--An alternate system capable of removing an equivalent amount of small organic compounds and salts shall also be acceptable in lieu of discharging aquatic venue water. -- Adds clarity so the code item stands on its own.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.4.2.1.1--~~If applicable~~When an alternate system is used, the return water from the alternate system shall maintain ~~salt and total organic carbon concentrations~~total dissolved solids concentrations that are less than or equal to tap water. -- Carbon is what makes something organic. Redundant term. Also, The average facility will not know the organic or salt concentrations of their tap water. A feasible and enforceable method of measurement would be to measure total dissolved solids.

MAHC Committee Response:

Partially agree. Code revised. TDS is not the critical issue; total organics is very important to water and air quality.

Comment:

4.7.4.2.3--This system shall be designed to have the ability to discharge, or with an alternate system ~~(or~~ treat and reuse,~~)~~ AQUATIC VENUE water at a rate of up to 4 gallons (15 L) per BATHER as calculated by Theoretical Peak Occupancy ~~per day per~~ for the AQUATIC VENUE~~.~~ The actual discharge amount is dependent on the level of total dissolved solids at the time of testing. -- One could infer by this line item that every facility must throw away or treat 4 gallons per bather per day regardless if water quality was acceptable or not. Calculating the number of bathers in a day is impossible. If this is a requirement then this should be based on Theoretical Peak Occupancy as it is a finite number and only for the design of the system. The actual use of the system should be based only on actual water quality levels. If one measures TDS and finds that it is high, then water can be discharged or treated with RO.

MAHC Committee Response:

Disagree. Admittedly, the exact amount of water to discharge is not known and will likely vary between pools (based on location, source water, bather density, temperatures, etc.). It is generally accepted that some water must be discharged to remove contaminants that will otherwise accumulate in pools over time. The starting point is a system to measure the discharge and a minimal rate to start with.

Comment:

4.7.5.2.2--The AHJ may grant a TURNOVER time variance for AQUATIC VENUES ~~with extreme volume or operating~~ conditions based on proper engineering justification. -- Extreme volume is not defined. Engineering analysis on any system would be acceptable.

MAHC Committee Response:

Partially agree. However no change made as including "extreme volume or operating conditions" provides guidance as to what is intended to be allowed for a turnover time variance.

Comment:

4.7.5.3.1--SPAS shall have a minimum of two adjustable filter system INLETS spaced at least 3 feet (0.91 m) apart and designed to distribute flow evenly. Inlet flow shall range from a minimum flow of 20 gpm to a maximum flow of 35 gpm. -- By requiring only two, maximum and minimum flow is necessary to avoid higher flows through few inlets.

MAHC Committee Response:

Partially agree. However no change at this time. A change such as this needs additional stakeholder input. Recommendations for a code change with supporting documentation should be submitted in advance for consideration at the 2015 CMAHC conference.

Comment:

4.8.1.1.2.1--Perimeter decks are required only where lifeguards are expected to access the aquatic venue edge. Where required d~~D~~ECKS shall have a minimum of 4 feet of clearance from AQUATIC VENUE edge to fencing or other obstruction to allow for ~~QUALIFIED LIFEGUARD transit,~~lifeguard station access, roaming to maximize viewing of the zone of patron surveillance, ~~or~~ change of position~~ing, to maximize viewing of the zone of PATRON surveillance~~and ~~as well as~~ execution of water extrication. -- This is intended to clarify that the entire perimeter of an aquatic venue does not need 4 feet of clearance to the fence. To require this would affect the ability for designers to use landscaping and other features along the perimeter. It would be a tremendous waste of space especially for indoor facilities where deck space is a premium for patrons. Lifeguard areas are spaced apart enough in which a rescue conducted within their zone would have a short distance to return to the area where the 4 foot clearance is located. Extrication is very infrequent.

MAHC Committee Response:

Disagree. Annex contains the following discussion: Traditional AQUATIC VENUEs should be surrounded by clear DECK space to allow for operational flow (foot traffic) as well as space to perform in the event of an emergency situation. Non-traditional AQUATIC VENUEs such as LAZY RIVERS, WAVE POOLS, etc. are not required to have clear space around due to the need to control access by providing a BARRIER to block access into unapproved entry areas. Both guarded and unguarded AQUATIC VENUEs should have the same clear space requirements.

Comment:

4.8.1.1.2.3--The designer and owner shall consider impact on PATRON zone surveillance when determining placement of structural, operational, and theming elements. These elements shall include but are not limited to chairs, fencing, ADA access equipment, and AQUATIC FEATURES. -- Included to address ADA equipment.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.1.1.3.2--Open joints or gaps larger than 3/16” (5 mm) wide or with vertical elevations exceeding 1/4” (6.5 mm) shall be rectified using ~~appropriate~~ fillers. -- Undefined as to what “appropriate” is.

MAHC Committee Response:

Partially agree. However no change made. Provides some guidance that fillers must be suitable for the application/intended use.

Comment:

4.8.1.3.1--Although difficult to establish a set coefficient of friction, it is unknown as to what a smooth finish is vs a moderate texture finish other than to use the examples provided. There are many relative terms.

MAHC Committee Response:

Disagree. The Annex contains the following discussion: 4.8.1.3.1 Slope
MAHC Table 4.8.1.2 was arrived at by distilling the preponderance of existing state CODES and established STANDARDS. Fundamentally, these sources all seek to eliminate standing water from the DECK, typically recognizing that smoother surfaces convey water more efficiently than rougher ones. Relating slopes to texture, rather than specific materials, provides the ability for any otherwise suitable DECK material or finish to be considered by the adopting jurisdiction.
There is an inherent conflict in sloping of DECKS. Steeper slopes provide more construction tolerance and surety in conveying water, particularly in active soil conditions. Shallow slopes are required to meet accessibility guidelines – particularly for cross-slopes. It is the intent of this section to encourage positive and proper drainage without running afoul of accessibility guidelines.

Comment:

4.8.1.4.1--PERIMETER DECK and POOL DECK shall be constructed with a uniform, and easily cleaned, surface such as concrete, tile, or acrylic surfaces. -- Add other examples so as to not infer only concrete is allowed.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.1.4.3--Delete section -- Artificial turf, manufactured for outdoor use, is frequently used in large aquatic facilities/waterparks adjacent to the perimeter deck to provide comfort to bathers and provide some protection from the heat of concrete surfaces during hot weather. Years of experience with this covering has proven it to be safe and patron friendly with reasonable maintenance.

MAHC Committee Response:

Disagree. Annex contains the following discussion: Carpet and artificial turf have been found to be inappropriate finish materials for the wettest area immediately around the POOL, i.e. PERIMETER DECK. Although the materials that carpet is manufactured from are durable and do not support mold growth, when they are installed over a relatively impermeable surface, water flows very slowly through the carpet. Soil and CONTAMINANTS entering into the carpet are not easily removed. Since the carpet stays wet longer, and soil and CONTAMINANTS remain in the carpet, mold and algae growth is observed. Therefore carpeting is not an acceptable finish material in the wet PERIMETER DECK.

Finish materials for the PERIMETER DECK should not block DECK drains or impair water flowing to DECK drains.
Carpeting can be installed beyond the DECK drains, i.e. DRY DECK.

Comment:

4.8.1.4.6--Where a PERIMETER DECK is required, I~~L~~oose plant material or bedding is not permitted. ~~within PERIMETER DECKS~~. Stable materials are permitted as allowed by MAHC Section 4.8.1.5. -- This is to clarify that where a perimeter deck is not required such as decorative islands within pools or along the perimeter of lazy rivers where access is not required, there can be landscaping. If needed, may want to add that landscaping or unstable materials must be contained so they don't enter the aquatic venue.

MAHC Committee Response:

Disagree. Change not necessary. Decks relating to wing walls and peninsulas are addressed in section 4.8.1.6.1.

Comment:

4.8.1.5.1.1--Where a PERIMETER DECK is required, the perimeter deck~~S~~ shall be 4 feet (1.22 m) minimum in unobstructed width. ~~around the POOL perimeter as prescribed in this section.~~ -- Perimeter decks are required per MAHC 4.8.1.1.2.1. Perimeter decks should only be required for access to the venue.

MAHC Committee Response:

Disagree. Annex contains the following discussion: Traditional AQUATIC VENUEs should be surrounded by clear DECK space to allow for operational flow (foot traffic) as well as space to perform in the event of an emergency situation. Non-traditional AQUATIC VENUEs such as LAZY RIVERS, WAVE POOLS, etc. are not required to have clear space around due to the need to control access by providing a BARRIER to block access into unapproved entry areas. Both guarded and unguarded AQUATIC VENUEs should have the same clear space requirements.

Comment:

4.8.1.5.1.2--PERIMETER DECKS shall be provided ~~around 100% of the AQUATIC VENUE perimeter except where special conditions exist as permitted by other sections of this CODE.~~in locations where access is required for bathers and lifeguards. -- This is intended to clarify that the entire perimeter of an aquatic venue does not need 4 feet of clearance. Perimeter decks should not be required 100% around the aquatic venue. Installing perimeter deck around 100% of an aquatic venue introduces unintended risks . Lifeguard areas are currently spaced apart to provide a viewing and rescue zone where the lifeguard has the ability to monitor guest behavior, provide input to the guests and execute a rescue from within their zones (a very infrequent event). The inclusion of a 4 ft perimeter deck around an entire aquatic venue may introduce the following risks: 1) allow for children to move from shallow water out onto the deck

and walk to deep water; 2) provide a ledge for bathers to attempt diving. Minimizing the amount of accessible perimeter deck reduces these risks. Additionally, to require 4 ft perimeter decking around 100% of the aquatic venues would: 1) affect the ability for designers to use landscaping and other features along the perimeter; 2) would be a tremendous waste of space especially for indoor facilities where deck space is a premium for patrons. Simply stated: Minimizing accessible perimeter deck reduces risk

MAHC Committee Response:

Disagree. However, code revised to specifically address perimeter deck requirement for wave pools. Annex contains the following discussion: Traditional AQUATIC VENUEs should be surrounded by clear DECK space to allow for operational flow (foot traffic) as well as space to perform in the event of an emergency situation. Non-traditional AQUATIC VENUEs such as LAZY RIVERS, WAVE POOLS, etc. are not required to have clear space around due to the need to control access by providing a BARRIER to block access into unapproved entry areas. Both guarded and unguarded AQUATIC VENUEs should have the same clear space requirements.

Comment:

4.8.1.5.2.1--6) Add "ADA access equipment" -- Required per ADA but good to mention here.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.1.5.2.1--Unobstructed DECK area 4 feet (1.22m) minimum in width shall be provided for access ~~around~~to: -- Clarify access to and not around as it may be unnecessary.

MAHC Committee Response:

Disagree. Intent is to provide minimum 4 ft clearance behind/around these items.

Comment:

4.8.1.5.2.1--3) lifeguard stand access/entry~~s~~, -- Clarify that 4 feet around a lifeguard stand is not necessary but 4 feet in width for access to the stand. The 4 feet behind the stand is unnecessary.

MAHC Committee Response:

Disagree. Intent is to provide minimum 4 ft clearance behind/around these items.

Comment:

4.8.1.5.3.2--DECK furniture locations shall be designed not to intrude upon any~~the~~ CIRCULATION PATH required by the ADA. -- It is near impossible to keep deck furniture out of circulation paths when patrons move them. This item should move to operations as it is not a design element unless used for designing locations for deck furniture. Worth mentioning this is for accessible routes.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.8.1.6.2--Delete -- Clarifies the language as the line item 4.8.1.6.2 was confusing

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.1.7.5--Horizontal depth markings and warning signs shall also be required per MAHC Section 4.5.19 if the ISLAND is designed for BATHER use. If the island is not designed for bather use, warning signs stating "No Entry" shall be required. -- Clarifies for islands that are not intended for bather use.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.1.9.1--Domestic water hose bibs ~~source points~~ shall be provided in sufficient quantity, spacing and type to ~~easily~~ wash down PERIMETER DECK and POOL DECK areas using a hose no longer than 100 feet.~~of adequate length~~. -- Clarifies that a hose bib is required. Easily is a relative term. 100 feet is a commercially available product and removes the vagueness of "adequate".

MAHC Committee Response:

Agree

Comment:

4.8.3.2.2--Starting platforms shall be removed if possible or prohibited from use during all recreational or non-competitive swimming activity by covering platforms with a manufacturer supplied platform cover . -- These covers inhibit use by patrons.

MAHC Committee Response:

Partially agree. Section wording revised and moved to Operation and Maintenance Section 5.8.3.

Comment:

4.8.3.3--Starting platforms shall be installed ~~in a minimum water depth of 4 feet (1.2 m~~to comply with the minimum requirements of FINA or NCAA, whichever is lower,). -- The use of starting platforms would be for competition in these organizations. There are minimum requirements set by these organizations already.

MAHC Committee Response:

Disagree. Although the governing bodies may set depths, the MAHC believes that these are potential injury issues that should be made clear in the MAHC.

Comment:

4.8.5.1.1 to 4.8.51.1.4.2--Delete Sections -- A replacement cable would be replacing what was already there and that would not be allowed within that area unless installed per other sections of the code. This line is not needed.

MAHC Committee Response:

Agree. Sections deleted.

Comment:

4.8.5.2.1--The designer shall coordinate with the owner's risk management team to consider impact on PATRON zone surveillance for placement of chairs and stands designed to be permanently installed so as to provide an unobstructed view of the PATRON surveillance zones. -- Clarifies the intent to coordinate with the owner. Some have in house risk management, others have 3rd parties, and some owners would do this themselves. The intent is to make sure the patron surveillance is considered primarily.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.6.1.1--All AQUATIC FACILITIES, CHEMICAL STORAGE SPACES, and POOL mechanical spaces shall have an ~~SECURE PERIMETER~~ enclosure consisting of any combination of building envelopes, site walls, or barrier fencing to prevent entry by unauthorized persons ~~ENCLOSURES preventing unauthorized entry~~.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.8.6.1.2--Delete section -- Redundant statement with the above line.

MAHC Committee Response:

Disagree. However, this section revised.

Comment:

4.8.6.2.1--Delete section -- This line has no value in enforceability.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.2--~~ENCLOSURES~~ Barriers for enclosures shall discourage climbing by not allowing nearby structures to simplify climbing over it, such as: light poles, site furnishings, overhanging tree limbs or other obvious footholds or handholds. -- The definitions were problematic and the term enclosure was deleted per these edits as it is a dictionary term. The word enclosure was used in several different ways and as such, the language was changed where needed to clarify intent.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.3--Delete section -- Redundant. Should be deleted.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.4--Enclosures for AQUATIC VENUE ~~ENCLOSURE~~S shall not block or encumber a required emergency egress path from other structures. -- Enclosure is a dictionary term.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.4.1--Where a required emergency egress path enters an area occupied by an outdoor AQUATIC VENUE, emergency exit pathways from the building(s) shall continue on DECK ~~of least equally unencumbered width, and continue to the ENCLOSURE and through~~along along the shortest path to exit gates. -- Clarifies in simple terms that the shortest distance on the deck should be taken to the exit gates of the outdoor aquatic venue.

MAHC Committee Response:

Disagree. Proposed change alters intent of the section.

Comment:

4.8.6.2.4.2--Delete section -- As written, one could interpret to mean that for any emergency, exit pathways would have to be separated as aquatic venues are not in operation during an emergency requiring evacuation.

MAHC Committee Response:

Disagree. From a building code perspective, building emergency exits must provide a path to safety for the building occupants. It generally is not considered acceptable for a required path of exit travel to lead through/to an area that is not a "public way" such as a swimming pool deck. So, effective separation of the path of exit travel from the aquatic venue is necessary. The section has been revised.

Comment:

4.8.6.2.4.3--Delete section -- Unnecessary as per the edits of 4.8.6.2.4.2

MAHC Committee Response:

Agree. Section 4.8.6.2.4.2 revised to address separation requirements.

Comment:

4.8.6.2.4.4--Seasonal separation may be employed at seasonally operated ~~POOLS~~aquatic venues, subject to the same physical requirements of permanent ~~ENCLOSURES~~barriers for aquatic venues. -- Consistency in the terms.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.4.4.1--Delete section -- This does not make sense. An unguarded pool needs separation by the very nature that it is unguarded.

MAHC Committee Response:

Agree. Section deleted.

Comment:

4.8.6.2.5--Delete section -- Upper level buildings would already require at least a 42" barrier withstanding a 200 pound test. If the intent is to make it more strict, then there should be a specific reference within the code.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.6--Windows on a building that forms part of an enclosure around an aquatic venue ~~POOL ENCLOSURE~~ shall have a maximum opening width not to exceed 4 inches. -- Clarifies language as the term enclosure has many forms in the code.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.7--For the purposes of this section, height is measured from finished grade to the top of the BARRIER on the side outside of the barriers surrounding an aquatic venue. ~~the AQUATIC VENUE ENCLOSURE~~. -- Clarifies language as the term enclosure has many forms in the code.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.7.2--~~ENCLOSUREs~~ Aquatic Facility Enclosures shall not be less than 6 feet (1.83 m) in height. -- Clarifies language as the term enclosure has many forms in the code. One could infer this is the enclosure for a chemical storage area, for an aquatic venue, or for the facility. We believe the intent is for the facility in which several venues can located within it.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.7.3--All Other BARRIERs (Not Serving as part of an AQUATIC FACILITY ENCLOSURE~~ENCLOSUREs~~): Except where otherwise noted, all other BARRIERs shall not be

less than 42 inches in height. -- Clarifies language as the term enclosure has many forms in the code.

MAHC Committee Response:

Agree

Comment:

4.8.6.3.1--When an enclosure is required for an aquatic venue, a~~A~~ll primary public access gates or doors serving as part of the~~an~~ enclosure around an AQUATIC VENUE ~~ENCLOSURE~~ shall be self-closing and self-latching from any open position unless they are staffed at all times when opened. -- Clarify that this is required only when the enclosure is required. There are pools with netted barriers to keep patrons away from pool edges, but the venues are not required to be completed enclosed.

MAHC Committee Response:

Partially agree. Code revised. It is necessary to keep this requirement to equip the gates/doors with the self-closing and self-latching hardware, in this Design and Construction section. However, a new section in Operation and Maintenance has been added to allow the gates/doors to be maintained open if the gates/doors are staffed at all times when open.

Comment:

4.8.6.3.1.1--All gates or doors with access from the exterior to the Aquatic Facility shall be capable of being locked from the exterior. -- This is under a section for Aquatic Venues. This line should be moved to Gates and Doors for Aquatic Facilities, not the venues as it doesn't make sense to have it locked.

MAHC Committee Response:

Partially agree. Section 4.8.6.3.1 revised for clarification.

Comment:

4.8.6.3.1.2--Gates or doors ~~They~~ shall be designed in such a way that they do not prevent egress in the event of an emergency. -- Clarify language

MAHC Committee Response:

Agree

Comment:

4.8.6.3.1.3--Gates or doors used solely for after-hours maintenance shall remain locked at all times whennot in use by staff. -- Clarify language only

MAHC Committee Response:

Agree

Comment:

4.8.6.3.1.4--Propping open perimeter ~~ENCLOSURE~~ AQUATIC FACILITY ENCLOSURE gates or doors shall be prohibited.

MAHC Committee Response:

Agree

Comment:

4.8.6.3.3--Turnstiles shall not form a part of an AQUATIC FACILITY ENCLOSURE.~~A POOL ENCLOSURE.~~

MAHC Committee Response:

Agree

Comment:

4.8.6.3.4--EXIT GATES shall be conspicuously marked.on the inside of the facility. Quantity, location, and width(s) for EXIT GATEs or doors shall be provided consistent with local building and fire CODES and applicable accessibility guidelines

MAHC Committee Response:

Agree

Comment:

4.8.6.3.5--EXIT ~~DOORs or gates~~ GATES shall swing away from the AQUATIC VENUE ENCLOSURE except where emergency egress CODES require them to swing into the AQUATIC VENUE ENCLOSURE.

MAHC Committee Response:

Disagree.

Comment:

4.8.6.3.7.1--For unguarded AQUATIC VENUES, self-latching mechanisms shall not be operable by small children on the outside of the ~~AQUATIC VENUES ENCLOSURE~~enclosure around an AQUATIC VENUE. -- Clarifies as enclosure have many uses in the code.

MAHC Committee Response:

Agree

Comment:

4.8.6.3.8--For all other AQUATIC VENUES, EXIT GATEs or doors shall be constructed so as to prevent unauthorized entry from outside of the ~~POOL ENCLOSURE~~enclosure around the aquatic venue. -- Clarifies as enclosure have many uses in the code.

MAHC Committee Response:

Agree

Comment:

4.8.6.4.1--Building walls enclosing an indoor AQUATIC ~~VENUE~~ FACILITY shall serve as the AQUATIC ~~VENUE~~ FACILITY ENCLOSURE. -- This creates flexibility for multiple venue indoor facilities.

MAHC Committee Response:

Agree

Comment:

4.8.6.4.1.1 & 4.8.6.4.1.2--Delete section -- This is unnecessary, otherwise all sections of the code would have to refer to other sections repeatedly.

MAHC Committee Response:

Agree

Comment:

4.8.6.4.2--Indoor AQUATIC VENUES shall be securable from unauthorized entry from other building areas ~~as well as the exterior~~. -- redundant

MAHC Committee Response:

Agree

Comment:

4.8.6.4.3--Where separate indoor and outdoor AQUATIC VENUES are located on the same site with the intention of patrons to have direct access between indoor and outdoor aquatic venues, then the outdoor aquatic venue shall have a continuous barrier which connects to the building wall adjacent to each side of the access directly to the indoor aquatic space to form an enclosure surrounding the aquatic venue to prohibit access from non-building occupants. Such an enclosure shall meet the requirements for AQUATIC FACILITY ENCLOSURES. For

facilities in which the outdoor aquatic venue is operated seasonally, a gate or door shall be used to prohibit access to the outdoor aquatic venue by patrons of the indoor aquatic space when the outdoor aquatic venue is not in operation. ~~, an AQUATIC VENUE ENCLOSURE shall be provided between them.~~ -- Many indoor waterparks and resorts have areas where guests can freely access both indoor and outdoor pools as though the outdoor pools were part of the overall aquatic facility. As written, the code would require a fence separating indoor from outdoor. This language allows for direct access for users of the indoor space.

MAHC Committee Response:

Disagree. Proposed revision alters the intent of the section.

Comment:

4.8.7.3--Vacuum systems that utilized the main circulating pump or a dedicated vacuum pump connected to the pool ~~Use of INTEGRAL VACUUM SYSTEMS~~ shall be prohibited.D468

MAHC Committee Response:

Agree

Comment:

4.8.7.5--Delete section -- 5.6.3.6 allows for extension cord use so this line item conflicts with those rules. This rule could create conditions where there are many receptacles introducing additional risk.

MAHC Committee Response:

Agree; deleted Section 4.8.7.5.

Comment:

4.9.1.1.1--The equipment ~~ENCLOSURE, area, or~~area or room floor shall be of concrete or other suitable material having a smooth slip resistant finish and shall have positive drainage, including a sump pump if necessary.

MAHC Committee Response:

Agree

Comment:

4.9.1.2.1--The size of the equipment ~~ENCLOSURE~~ ~~,~~ room~~,~~ or area shall provide working space to perform routine operations and equipment service.

MAHC Committee Response:

Agree

Comment:

4.9.1.2.2--Equipment ~~ENCLOSURES,~~ rooms or areas shall be lighted to provide 30 foot candles (320 lux) of illumination at floor level in accordance with IES guidelines.

MAHC Committee Response:

Agree

Comment:

4.9.1.5.1.1--Add the following: Chemical sample piping. -- This facilitates making sure the sample taken corresponds to the correct venue.

MAHC Committee Response:

Agree

Comment:

4.9.1.5.3--All valves shall be clearly identified by number with a brass tag, plastic laminate tags or permanently affixed alternate. -- Valve numbers are required

MAHC Committee Response:

Agree

Comment:

4.9.1.5.4--Valves shall be described as to their function and referenced in the operating instruction manual and a water-resistant, easily readable wall-mounted piping diagram shall be furnished and installed~~provided~~. -- Establishes longevity of the chart.

MAHC Committee Response:

Agree

Comment:

4.9.1.7.2 & 4.9.1.7.3--Change "Natatorium" to "indoor aquatic facility" -- Check ALL instances.

MAHC Committee Response:

Agree

Comment:

4.9.1.7.3.1--Where a door or doors must be installed in a wall between an EQUIPMENT ROOM and a ~~NATATORIUM~~INDOOR AQUATIC FACILITY, the floor of the EQUIPMENT ROOM shall slope per local building requirements back into the EQUIPMENT ROOM in such a way as to prevent any equipment-room spills from running under the door into the ~~NATATORIUM~~INDOOR AQUATIC FACILITY -- The slope should meet building code although it is specific to slope back into the equipment room.

MAHC Committee Response:

Agree

Comment:

4.9.2.1.1--POOL chemicals, acids, fertilizers, salt, de-icing chemicals, oxidizing cleaning materials, other CORROSIVE or oxidizing chemicals, and pesticides should be STORED outdoors in a well-ventilated ~~protective ENCLOSURE~~area with installed barriers to prevent unauthorized access. -- Enclosure can be inferred to be an aquatic facility enclosure. Added language to clarify that it needs barriers to prevent unauthorized entry.

MAHC Committee Response:

Agree

Comment:

4.9.2.1.4--Delete Section -- This is not an enforceable line item.

MAHC Committee Response:

Agree

Comment:

4.9.2.1.5--Change MSDS to SDS -- this is the current terminology from EPA

MAHC Committee Response:

Agree

Comment:

4.9.2.10.4--In addition to the signs required on all chemical storage areas, a~~A~~ sign shall be posted on the exterior of the entry door, stating “DANGER - GASEOUS OXIDIZER – OZONE” in lettering not less than 4 inches high -- Clarifies that other signs including NFPA reactivity chart is needed.

MAHC Committee Response:

Agree

Comment:

4.9.2.10.5.1--The alarm system shall consist of both an audible alarm capable of producing at least 85 decibels at 10 feet distance, and a visible alarm consisting of a flashing light mounted in plain view of the entrance to the ozone-EQUIPMENT ROOM. -- Create consistency with other alarms.

MAHC Committee Response:

Agree

Comment:

4.9.2.11.7.2--3) At least 20~~ten~~ feet from any operable window, and 4) At least 20~~ten~~ feet from any adjacent building. -- Creates consistency with 4.9.2.6.2.1.1

MAHC Committee Response:

Agree

Comment:

4.9.2.11.7.5--A minimum of two (2) SCBA systems shall be on hand at all times and two (2) ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATORS are to be involved in the changing of the tanks.

MAHC Committee Response:

Disagree. No need to change defined term (we decided not to expand the words in the qualified operator definition).

Comment:

4.9.2.11.7.6--One of the ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATORS should be stationed outside of the chemical room where the ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATOR inside can be seen at all times.

MAHC Committee Response:

Disagree. No need to change defined term (we decided not to expand the words in the qualified operator definition).

Comment:

4.9.2.4.1--Add 4) Product chemical hazard NFPA chart~~.~~ -- Is easily identified by the Fire dept.

MAHC Committee Response:

Agree

Comment:

4.9.2.4.1--Delete #3 -- SDS locations are provided during training and should not be on the door.

MAHC Committee Response:

Disagree and add response to Annex: Given the high turnover rate or potential for employees to travel between workplaces at some pool facilities, it would seem prudent to require a posting of the SDS location.

Comment:

4.9.2.4.2--It is unknown what an emergency egress device is. Please define. We did not attempt to define it as it is unknown.

MAHC Committee Response:

No change needed. The Annex provides the following information: "Emergency Egress. This usually takes the form of a kick-out panel in the door. When trapped, a person can sit down and kick out the panel, creating an opening usually about six inches narrower than the door and about 28 inches (0.71 m) high. Since these are used in most enclosures where a person can be trapped (e.g. walk-in freezers) the volume is high enough for additional expense to be minimal. Trapping could happen in several ways, but the most common is binding of the door to the jamb. Corrosion products can build up inside a metal door between the jamb and the wall, forcing the jamb away from the wall and toward the door. At some point the door will either fail to open or fail to close."

Comment:

4.9.2.4.5.2.1--Such lock shall require a key or combination to open from the outside into the chemical storage space. -- Added for clarity as to what “outside” is.

MAHC Committee Response:

Agree

Comment:

4.9.2.4.5.7--Such doors shall be equipped with a limit switch and an alarm that will sound if the door remains open for more than thirty (30) minutes if the chemical storage area has Extremely Hazardous Substances per the EPA. -- Burdensome to have this on all chemical storage areas if they do not pose significant risk.

MAHC Committee Response:

Disagree. The door to the chemical storage space is designed to be self-closing and locking and is to be maintained closed. Therefore, a door that is opened for more than 30 minutes typically would need to be checked.

Comment:

5.1.1.1--Prior to opening ~~an AQUATIC VENUE~~ to the public, the AQUATIC FACILITY owner shall apply to the AHJ for a permit to operate an AQUATIC VENUE. ~~by:~~1) ~~Submitting a permit application,~~ 2) ~~Paying the applicable fees, and~~ 3) ~~Showing compliance with the CODE.~~ -- This is redundant with line below.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.1.1.2--~~A separate permit is required for each AQUATIC VENUE.~~ -- There are many items in the code that are general and not associated with an individual aquatic venue. The permit should be issued for the facility, not for the individual aquatic venues. An approval process already occurs when a new aquatic venue or substantial alteration occurs.

MAHC Committee Response:

Agreed. Made facility specific with venues listed.

Comment:

5.1.1.3--Before a permit ~~(license)~~ is issued, the following shall be provided: ~~AQUATIC FACILITY owner shall supply information showing that:~~ 1) The AQUATIC FACILITY owner has shown the AQUATIC VENUE is in compliance with the requirements of this CODE,2) ~~All required application fees have been paid, and~~ 3) The AHJ has approved the ~~The~~ AQUATIC VENUE to be open to the public. ~~has been approved by the AHJ.~~ -- Fees are up to the AHJ and should not be mentioned in the MAHC. If a community decides to do permits as a service, fees may not be required.

MAHC Committee Response:

Agree. Changed venue to facility.

Comment:

5.1.1.4--The permit shall be issued in the name of the owner for the calendar year . ~~, or if a seasonal AQUATIC FACILITY, for the period during the calendar year the facility will be in operation.~~ -- This would allow for the owner and the AHJ to establish a convenient time for the inspection over the entire calendar year.

MAHC Committee Response:

Agreed. Edited further to allow the AHJ to decide the appropriate time (i.e., could be longer than a year for some facilities).

Comment:

5.1.1.5--Delete section -- Redundant with 5.1.1.4 if good for a calendar year

MAHC Committee Response:

Partially agree. Left it up to AHJ to decide time.

Comment:

5.1.1.6--The AQUATIC FACILITY owner shall renew the permit to operate ~~annually using forms and paying permit fees prescribed by the AHJ~~ prior to the scheduled expiration of an existing permit to operate an AQUATIC VENUE. -- Fees do not need to be included. Specifying forms is too prescriptive.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.1.1.7--The permit ~~(license)~~ to operate may be withheld, revoked or denied by the AHJ for noncompliance of the AQUATIC venue ~~FACILITY~~ with the requirements of this CODE -- The permit is for the venue not the facility.

MAHC Committee Response:

Partially agreed. Kept as facility rather than venue since permit is for facility.

Comment:

5.1.1.8--delete section -- This statement is not necessary. It does not add to the code as it is stated previously the facility must comply in order to have a permit to open.

MAHC Committee Response:

Disagree. The MAHC has not specified that owner is final responsible person/group rather than the one doing the application for permit. Helps clarify responsibility.

Comment:

5.1.2.1--The operating permit shall be maintained on the premises of the AQUATIC FACILITY and made available upon request or posted in a location conspicuous to the public. ~~on the premises of the AQUATIC FACILITY.~~ -- The proposed language offers more flexibility. Similar

to the posting of elevator certificates in an office. Often the outdoor environment is not conducive to posting paper permits and having them survive elements.

MAHC Committee Response:

Disagree. The intent is to be conspicuous to the public. Wording does not say it has to be outside (restaurants post conspicuously inside). Made available upon request is a barrier that the public should not have to overcome.

Comment:

5.10.4.6.2.1--delete section -- Unnecessary as the line above suffices

MAHC Committee Response:

Disagree. MAHC feels it needs to be specific here to help clarify.

Comment:

5.10.5.1--All towels provided by the AQUATIC FACILITY shall be washed with detergent in warm water, rinsed, and thoroughly dried at the warmest temperature listed on the fabric label.after each use.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.10.5.1.1--Delete section -- redundant

MAHC Committee Response:

Agreed. Deleted

Comment:

5.10.5.1.1--Any attire ~~Suits~~ provided by the AQUATIC FACILITY shall be washed in accordance with the fabric label or manufacturer's instructions.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.10.5.3--Equipment provided by the AQUATIC FACILITY that comes into contact with BATHER's eyes, nose, ears, and mouth (including but not limited to snorkels, nose clips, and

goggles) shall be cleaned, SANITIZED between uses, and stored in a manner to prevent biological growth. -- indicates frequency of cleaning.

MAHC Committee Response:

Agreed, edited.

Comment:

5.10.5.4--Other shared equipment provided by the facility, including but not limited to fins, kickboards, tubes, lifejackets, and noodles, shall be ~~cleaned, scrubbed,~~kept clean and stored in a manner to prevent biological growth. -- Added lifejackets as these are commonly provided in waterparks. Clarified the performance requirement rather than a prescriptive method. Sanitizing equipment can be accomplished through many different means.

MAHC Committee Response:

Agreed, edited.

Comment:

5.12.1.1--Warning signs shall be ~~provided~~ posted in accordance with manufacturer's recommendations.

MAHC Committee Response:

Agreed.

Comment:

5.12.7.2--SPAS shall be drained, cleaned, and water replaced when needed to maintain water quality. ~~, but at least once every week.~~ -- Unnecessary to drain once a week especially for venues with low bather load. This would be a waste of natural resources. Combined chlorine and TDS are good indicators of when a spa should be drained.

MAHC Committee Response:

Agreed. Performance based on water quality criteria.

Comment:

5.12.7.3.1--delete section -- This is onerous as it is very difficult to determine the number of users per day. There should be clear indicators such as combined chlorine or TDS readings which can be taken by the staff.

MAHC Committee Response:

Disagree. Water quality is a continuing and recurrent issue with spas. This formula is used elsewhere in the industry and this is needed while further data is collected on the role of other measures.

Comment:

5.2.1.2--Delete section -- Fee schedules are not the purpose of the MAHC. Fees should be left to the local law.

MAHC Committee Response:

Agree. All fee references removed from MAHC and moved to administrative guidance.

Comment:

5.4.1.1--Delete "Short" in section title

MAHC Committee Response:

Agreed. New wording no longer requires use of the word.

Comment:

5.4.1.1--Delete language and replace with: "When an AQUATIC VENUE is not open to the public, one of the following conditions shall be met:
1) Where the AQUATIC VENUE has a barrier enclosing it per MAHC XXXX,
a. The water shall be recirculated and treated to meet the criteria of this code, or
b. The water shall be drained; or
c. An approved SAFETY cover that meets ASTM F1346-91 shall be installed.
2) Where the AQUATIC VENUE does not have a barrier enclosing it per MAHC XXXX and other parts of the AQUATIC FACILITY are open to the public,
a. The water shall be recirculated and treated to meet the criteria of this code and the AQUATIC VENUE shall be staffed to keep bathers out, or
b. An approved SAFETY cover that meets ASTM F1346-91 shall be installed.
3) Where the AQUATIC VENUE does not have a barrier enclosing it per MAHC XXXX and the AQUATIC FACILITY is closed to the public,
a. The water shall be recirculated and treated to meet the criteria of this code, or
b. The water shall be drained; or
c. An approved SAFETY cover that meets ASTM F1346-91 shall be installed." -- There are many scenarios for venue closure. This is an attempt to address venues that are part of facilities with multiple venues. At times one venue is closed while others are open. If they don't have a barrier, then an empty pool is a fall hazard. If water is not treated then it is a health hazard. If left alone without a barrier, then it is a drowning risk. This language addresses short and long term closures based on risk. The edits suggested would apply to both long and short closures. This line should be deleted as a result.

MAHC Committee Response:

Agreed. Replaced.

Comment:

5.4.1.1.1--Delete section -- This is a very vague statement. Per OSHA, hazards should not be present. Unnecessary to state this here.

MAHC Committee Response:

Agreed. Replaced with new text.

Comment:

5.4.1.2.1--Delete section -- The edits above remove the need for this line item.

MAHC Committee Response:

Agreed. Replaced with new text.

Comment:

5.4.1.2.2--Delete Section -- The edits suggested would apply to both long and short closures. This line should be deleted as a result.

MAHC Committee Response:

Agreed. New wording should clarify choices.

Comment:

5.4.1.2.3--An owner or operator of an AQUATIC VENUE ~~closed for more than seven days~~ shall verify that the AQUATIC VENUE meets all applicable criteria of this CODE before reopening the AQUATIC VENUE. -- This language clarifies that after ANY closure, the operator must verify it complies. Added the term “applicable” as some venues will have variances approved and this language could infer it must comply regardless of variance.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.4.2.1.2--The AQUATIC FACILITY preventive maintenance plan shall include details and frequency of owner/~~’s or~~ operator’s planned routine facility inspection, maintenance ~~or servicing~~, and ~~recirculation and water treatment component~~ replacement of recirculation and water treatment components. -- Clarifies language.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.4.2.2.1--A copy of the approved plans and specifications shall be available at the AQUATIC FACILITY~~VENUE~~ for each AQUATIC VENUE~~FACILITY~~ constructed after the adoption of this CODE. -- Seemed to be switched.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.5.6.1.1--CRACKS exhibiting any of the following characteristics shall be evaluated and a repair schedule developed by a structural engineer:

1) CRACKS with vertical displacement;
2) CRACKS of varying width;
3) CRACKS concentrated to a specific area;
4) CRACKS exposing any reinforcement;
5) CRACKS obviously recurring from previous patches;
6) CRACKS in corners;
7) CRACKS drawing a defined line; and
8) Surface CRACKING over 1/8 inch (3.2mm) in width. -- Provides direction for mitigation. “obviously” is a relative term.

MAHC Committee Response:

Agreed. We have changed the wording to reflect public health and safety performance criteria requiring (trips, falls, laceration) and moved old wording to annex.

Comment:--*5.5.6.1.2*

Surface CRACKS under 1/8 inch (3.2mm) wide shall be documented and monitored for any movement or change including opening, closing, and/or lengthening. Inspection intervals and repair schedules shall be developed by a structural engineer. -- Provides direction for mitigation.

MAHC Committee Response:

Disagree. Left as is. We have changed the wording to reflect public health and safety performance criteria requiring (trips, falls, laceration) and moved old wording to annex.

Comment:

5.6.1.1.3--Delete section -- Unnecessary line item. As long as light levels are achieved as stated in the code, this line item is unnecessary. If lights are not needed then the operator should be able to choose not to use an underwater light.

MAHC Committee Response:

Disagree. Keep this as it is necessary for the inspector to be able to check and one cannot rely on an operator saying they don't use the lights.

Comment:

5.6.1.2.1--Delete section -- This is the responsibility of the lifeguard to assess glare and adjust as needed. Assessing glare does not mean that will ensure the bottom is visible.

MAHC Committee Response:

Agreed this is unclear. Have reworded to clarify and removed the word "ensure".

Comment:

5.6.1.2.1--section header "good condition" is numbered incorrectly

MAHC Committee Response:

Agreed, edited.

Comment:

5.6.1.2.1--Lighting equipment shall be maintained in good condition and at the levels established in MAHC Section 4.6.1. -- Should not be under glare line item.

MAHC Committee Response:

Agreed. Two sections deleted since they are a repeat of section above.

Comment:

5.6.1.2.2--Windows and lighting equipment shall be adjusted, if possible, to minimize glare and excessive reflection on the water surface. -- Not always able to adjust windows and lighting.

MAHC Committee Response:

Agreed, edited.

Comment:

5.6.1.2.2--Delete section -- Vague and unnecessary line item

MAHC Committee Response:

Agreed, stated earlier.

Comment:

5.6.1.3.1--Delete section -- Edited earlier sections to simply state light levels required regardless of day or night operation. This line is unnecessary.

MAHC Committee Response:

Disagree. Facility staff may not be able to assess all design criteria for lighting and this may make it simpler from a management standpoint.

Comment:

5.6.10.4.2--Delete section -- This requirement should not be limited to slide surfaces. Already stated in section below.

MAHC Committee Response:

Disagree. Not limited to slide surfaces. Repeated in other areas that have water flowing over them.

Comment:

5.6.10.4.3--Slide water flow rates shall be checked ~~before AQUATIC VENUE opening~~ to be within designer or manufacturer's specifications prior to opening to the public.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.6.10.4.4--~~WATERSLIDE lines susceptible to holding stagnant water shall maintain disinfectant throughout the lines as per MAHC Section 5.7.3.1.1.3.~~ Where waterslide plumbing lines are susceptible to holding stagnant water, waterslide pumps shall be started with sufficient time prior to opening to flush such plumbing lines with treated water. The QUALIFIED OR ONSITE AQUATIC FACILITY OPERATOR shall verify the water in the system is within the parameters specified by this code. -- This is impossible if the water is truly stagnant. One should not inject chemicals into a stagnant water line. Better to state that waterslides should be started with sufficient time prior to opening to flush stagnant water from the plumbing lines and verify the water within the system is at the proper sanitizer level.

MAHC Committee Response:

Agreed. Replaced.

Comment:

5.6.10.5.2--Gates, locks, and associated alarms, if required, shall be tested daily prior to opening. -- This is to clarify they are the alarms associated with gates and locks, not burglar or fire alarms.

MAHC Committee Response:

Agreed, wording edited. Also clarified in annex.

Comment:

5.6.10.6.1--The AQUATIC VENUE shall be kept clean of debris, organic materials, and ~~accessible~~ slime/biofilm in accessible areas in the water and on surfaces.

MAHC Committee Response:

Agreed, edited.

Comment:

5.6.10.6.4--Delete section -- Redundant with 5.6.10.6.1 above

MAHC Committee Response:

Agreed. Deleted.

Comment:

5.6.3.4.1--Maintenance or repair of electrical circuits or devices shall preserve grounding compliance with the NEC, especially in accordance with NEC Article 250 Grounding and Bonding, Article 680 Swimming Pools, Fountains, and Similar Installations, and Chapter 3, or with applicable local CODES. -- Identify Chapter 3 of what source document.

MAHC Committee Response:

Disagree. MAHC has simplified to state NEC and not specify subsections for which numbers may change.

Comment:

5.6.3.4.2--Delete section -- This is not clear as to what a minor repair is.

MAHC Committee Response:

Agreed wording is undefined so was deleted. Clarified wording.

Comment:

5.6.3.4.4--Damaged grounding conductors or grounding electrodes, associated with recirculation or DISINFECTION equipment or with underwater lighting systems, shall be

repaired by a QUALIFIED PERSOn with the N. skills, training, or credentials to carry out the tasks. -- Added the content of the definition here and deleted in glossary as the term is used only once.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.6.3.4.5--The public shall not have access to the AQUATIC VENUE until such grounding conductors or grounding electrodes are repaired. ~~by a QUALIFIED PERSON.~~ -- The line above already has the requirement that a qualified person has to do the repair.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.6.7.4.1--Removal of water from the POOL and replacement with make-up water shall be performed as needed to maintain water quality.. This shall be accomplished by: 1) Discharging waterged from the system through backwash or other means, or, or 2) Treating watered with an alternate system meeting the requirements of MAHC Section 4.7.4.2.1 and reused. -- This edit leaves the requirement open to discharging water to bring water quality up to the standards and does not prescribe that a certain number of gallons must be discharged. Often, bathers carry out an amount of water and autofill systems add that water back in. Rain water additionally dilutes the system and backwashing discharges water as well. The point of the 4 gallons per day is to dilute the organic load in the pool. This is a European requirement where many pools are operated as part of indoor warming pools and spas. The organic load is higher and the free chlorine levels are lower. To use this number would create a demand for water that may not be necessary if water quality is still within parameters. Discharging this amount of water daily would also create a burden on municipal systems and would be a tremendous waste of natural resources. TDS is a good measure of waste in a pool as is combined chlorine, which are measurable. It is near impossible to know how many bathers per day enter a facility and it is not a good measure as 1 bather can enter a facility and get into a pool for 5 minutes yet 4 gallons of water would have to be dumped.

MAHC Committee Response:

Disagree. TDS is not the critical issue. Total organics is very important to water and air quality. Admittedly, the exact amount of water to discharge is not known and will likely vary between pools (based on location, source water, bather density, temperatures, etc.). It is generally accepted that some water must be discharged to remove contaminants that will otherwise accumulate in pools over time. The starting point is a system to measure the discharge and a minimal rate to start with.

Comment:

5.6.7.4.2, 5.6.7.4.2.1, 5.6.7.4.3--Delete sections -- The edit above encompasses these items where they are no longer needed.

MAHC Committee Response:

Disagree. Sections kept.

Comment:

5.6.9.1.2--PATRONS shall not eat or drink while in or partially in the AQUATIC VENUE water, except in designated areas such as swim-up bars.~~.~~

MAHC Committee Response:

Agreed. Wording edited.

Comment:

5.6.9.1.3--~~PATRONS shall not drink while in or partially in the AQUATIC VENUE water except in designated areas.~~Swim-up bars, when utilized, shall provide facilities for bathers to place food and drinks on a surface which can be sanitized. --- Change section header from "drinking" to "swim up bars" Swim up bars are common place in resorts and hotels. In general the consumption of food and drink are confined to a particular area and a counter is provided to place food and beverages.

MAHC Committee Response:

Agreed. Wording edited.

Comment:

5.6.9.2.2--Change "Tables" to "Furniture. -- Clarify that it is for any furniture.

MAHC Committee Response:

Agreed. Wording edited.

Comment:

5.7.1.2.1--Delete Section -- Unclear as to what turnover would be for a combined treatment system. The requirements of the code for the individual aquatic venues would apply so this line is unnecessary.

MAHC Committee Response:

Agree. Wording clarified to point to turnover rates (new section for existing venues created) but not deleted.

Comment:

5.7.1.4.2--The automatic fill system, when installed, shall maintain the water level at an elevation such that the gutters ~~must~~ overflow continuously around the perimeter of the POOL. -- Not all systems will have an autofill.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.1.4.3--The automatic fill system, when installed, shall maintain SKIMMER water levels near the middle of the SKIMMER openings.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.1.4.4--The flow through each SKIMMER shall be adjusted ~~as often as necessary~~ to maintain skimming action that will remove all floating matter from the surface of the water. -- Although the term "all" is near impossible, it is understood what the intent is. Removed "often as necessary" as it is understood that it should be adjusted when it is not removing all the floating matter.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.1.4.6.1--Delete section -- Unnecessary as per the requirement of the line above.

MAHC Committee Response:

Disagree. Does not hurt to clarify.

Comment:

5.7.1.9.1--~~All~~ AQUATIC VENUEs constructed after the adoption of this code shall be operated 24 hours per day at the designed flow rate to provide the required TURNOVER RATE ~~24-hours per day except as allowed~~as per ~~in~~ MAHC Section 4.7.1.10. AQUATIC VENUES constructed before the adoption of this code shall be operated 24 hours per day at the designed flow rate in accordance with the code in force at the time of construction. -- This language is to clarify that only those newly constructed facilities must comply with the MAHC and all others are to meet the code at the time of construction. To make all facilities comply now would be a tremendous financial burden in upgrading filtration systems.

MAHC Committee Response:

Agreed. Edited, included alteration as well.

Comment:

5.7.2--ADD: Filters shall comply with NSF/ANSI 50 and be certified by an ANSI accredited certifying agency -- Is the intent for filters to be NSF50 certified? If so, best to add a single line stating all filters shall be NSF50 certified, then remove it from the individual types of filters. The requirement was evident in some types but not all.

MAHC Committee Response:

Agreed, that is the intent. Added to front of section.

Comment:

5.7.2.1.1--High-rate granular media filters shall be operated and backwashed at the flow rate per square foot as per the manufacturer's operating instructions. ~~at no more than 15 gpm/ft2 (m/h) when a minimum bed depth of 15 inches (38 cm) is provided per manufacturer.~~ -- These lines seem very prescriptive as manufacturers may design other systems that may operate well outside these parameters.

MAHC Committee Response:

Disagree. MAHC intent is to slow down filtration rates so they are more efficient. Did not add backwash wording in since it is separate wording below this. See annex for discussion.

Comment:

5.7.2.1.1.1--~~When a bed depth is less than 15 inches (38cm), filters shall operate at no more than 12 gpm/ft2.~~ -- These lines seem very prescriptive as manufacturers may design other systems that may operate well outside these parameters.

MAHC Committee Response:

Disagree. Efficiency is about rate and bed depth and the MAHC intent is to improve efficiency.

Comment:

5.7.2.1.2--Delete Section

MAHC Committee Response:

Disagree. The MAHC is striving to improve filter performance and standardization around backwashing is needed to preserve efficiency. It is considered best practice to fully fluidize the media.

Comment:

5.7.2.1.4--Delete section -- This is too prescriptive. Some filters may operate well without backwashing so often especially if bather load is very low. To backwash unnecessarily is a waste of natural resources.

MAHC Committee Response:

Agreed, deleted.

Comment:

5.7.2.1.4.2.1--If a sand ~~the~~ filter is backwashed while the AQUATIC FACILITY is open to BATHERS, then ~~one of~~ the filter flow shall be redirected to drain for a period of time sufficient to displace the volume of water inside of the filter ~~the following two procedures shall be performed~~ after the normal backwashing procedure is completed and prior to the filter being placed back in normal operation: -- Delete the remaining numbers. Each filter is different and the performance objective is to displace the volume in the filter. To give instruction on a prescriptive method is not necessary but rather to tell the operator that the expectation is to displace the volume by whatever time frame is needed based on the type of filter they have. Procedure 2 is also prescriptive and redundant.

MAHC Committee Response:

Partially agree. Not incorporated since the MAHC does not think backwashing should be done while bathers are in the venue to prevent chemical mixing accidents. Section deleted.

Comment:

5.7.2.1.5--Delete section -- redundant

MAHC Committee Response:

Agreed, deleted.

Comment:

5.7.2.1.6--delete section -- redundant as the first line item allows for backwashing per the manufacturer instructions.

MAHC Committee Response:

Agreed, deleted.

Comment:

5.7.2.2.1--Precoat filters shall be operated and backwashed per the manufacturer's operating instructions ~~The appropriate media type and quantity as recommended by the filter manufacturer shall be used.~~

MAHC Committee Response:

Disagree. Kept separate to keep it clear.

Comment:

5.7.2.2.1.1--The appropriate media type certified to NSF/ANSI 50 by an ANSI-accredited certification organization and the appropriate quantity as recommended by the filter manufacturer shall be used. ~~The media shall be certified to NSF/ANSI 50 by an ANSI-accredited certification organization for use in the filter.~~

MAHC Committee Response:

Disagree. Kept separate to keep it clear.

Comment:

5.7.2.2.2--Change section header "Precoating" to "Return to the Pool"

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.2.2.2--~~Precoating of the filters shall be required in closed loop (precoat) mode~~Precoat filters shall be operated to minimize the potential for media or debris to be returned to the POOL. ~~unless filters are certified to NSF/ANSI 50 by an ANSI-accredited certification organization to return water to the POOL during the precoat process~~. -- The intent should be that backflow of media should not occur. No need to make it more complicated.

MAHC Committee Response:

Disagree. Keep wording.

Comment:

5.7.2.2.3--Delete section -- Vague statement. Not sure if the filter must be NSF 50 certified or the operation should be.

MAHC Committee Response:

Agreed. Clarified wording. All filters and media listed and labeled in beginning of section.

Comment:

5.7.2.2.3.1, 5.7.2.2.3.1, 5.7.2.2.3.2, 5.7.2.2.4--Delete sections -- This information seems very prescriptive as though taken from the instructions in a manufacturer's operating manual. The intent should be that backflow of media should not occur unless NSF50 certification allows for it. Comparing sand filter requirements and these requirements, it seems the writer was focused on precoat filter operation.

MAHC Committee Response:

Disagree. Prefer to keep wording.

Comment:

5.7.2.2.5.1--Delete section -- Does this address a particular risk? If not, it is unnecessary.

MAHC Committee Response:

Disagree. Wording clarifying that there are other options.

Comment:

5.7.2.2.6 & 5.7.2.2.7--Delete section -- redundant

MAHC Committee Response:

Partially agree. Deleted some of the wording.

Comment:

5.7.2.2.7.1 & 5.7.2.2.7.2--Delete -- Too prescriptive. DE and perlite should be loaded as per the manufacturer instructions and may differ from this amount. This is redundant with the line item for precoat filters stating they shall be operated in accordance with the manufacturer instructions..

MAHC Committee Response:

Agree. Code revised.

Comment:

5.7.2.3.1--Cartridge filters shall be operated in accordance with the filter manufacturer's recommendation. ~~and shall be certified to NSF/ANSI 50 by an ANSI-accredited certification organization.~~

MAHC Committee Response:

Disagree. We want to clarify that they should be listed/labeled.

Comment:

5.7.2.3.2--The maximum operating filtration rate for any surface-type cartridge filter shall not~~:~~ ~~Exceed the lesser of either the manufacturer's recommended filtration rate or 0.375 gallons per minute per square foot (0.26 L/s/m2) or drop~~ be below the design flow rate required to achieve the TURNOVER RATE for the AQUATIC VENUE. -- Redundant with the line item above.

MAHC Committee Response:

Disagree. Wording kept to clarify upper and lower limits.

Comment:

5.7.2.3.3--Active filter cartridges shall be exchanged with clean filter cartridges~~ and fouled cartridges cleaned in accordance with the filter manufacturer's recommendations~~ whenever the ~~filtration rate drops below 0.30 gallons per minute per square foot (0.20 L/s/m2).~~flow rate drops below the rate required to achieve the turnover rate for the aquatic venue. -- Too prescriptive as each filter type may vary depending on the sieve size. The operation required is to change to a clean filter. Some may simply throw away a cartridge.

MAHC Committee Response:

Partially agree. Deleted wording about cleaning, covered elsewhere. Revisions made to be consistent with other filter type backwash/cleaning criteria.

Comment:

5.7.2.3.3.1--When the filter element manufacturer has no established cleaning procedure,~~ the cleaning procedures found in MAHC Section 5.7.2.3.3.2 and 5.7.2.3.3.3 shall be used.~~

MAHC Committee Response:

Disagree. Needs some instruction.

Comment:

5.7.2.3.3.2--The following procedures shall be implemented to clean the filter housing:
1) Drain filter housing to waste;
2) Remove the filter cartridges from the housing;
3) Clean the inside of the filter with a brush and mild detergent to remove biofilms and algae;
4) Rinse the cartridge with a spray nozzle thoroughly;
5) Degrease the cartridge if necessary;
4)6) Sanitize the cartridge if necessary to prevent algae and biofilm; and
5)7) Mist the housing walls with CHLORINE bleach at a 1:10 dilution. -- Consistent with previous requirements. Removed unnecessary lines.

MAHC Committee Response:

Disagree. The content is lost by trying to merge filter housing with filter cartridge instructions. Easier to follow if they are kept separate.

Comment:

5.7.2.3.3.3--Delete section beginning with "Cartridge Cleaning" -- redundant

MAHC Committee Response:

Disagree. The content is lost by trying to merge filter housing with filter cartridge instructions. Easier to follow if they are kept separate.

Comment:

5.7.2.3.3.3.1--Delete section -- unnecessary and prescriptive

MAHC Committee Response:

Agreed partially, edited wording.

Comment:

5.7.2.3.3.3.2--A pressure washer shall not be used to ~~backwash~~ clean cartridge filters.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.2.3.3.3.3--Delete section -- Not always necessary to degrease at every cleaning. In low bather load conditions, this would be a waste of time and add to use of detergents.

MAHC Committee Response:

Disagree. The MAHC wants to make sure this is done. If we say "as necessary" then it is open to too much interpretation not as enforceable.

Comment:

5.7.2.3.3.3.3.1--In the absence of manufacturer instructions for degreasing a cartridge filter, the procedure shall be:
1) Soak the cartridge overnight in one of the following solutions:
2)• A cartridge filter cleaner/degreaser per instructions on product label, or
3)• A solution of water with 1 Cup of tri-sodium phosphate (TSP) per 5 gallons of water, or
4)• 1 Cup of automatic dishwashing detergent per 5 gallons of water.
2) Remove the cartridge from the degreaser solution and thoroughly rinse -- Tri-sodium phosphate is not commercially available as there are concerns about the use of phosphates in water systems.

MAHC Committee Response:

Disagree on collapsing structure. Makes it less clear.

Comment:

5.7.2.3.3.3.3.2--Delete section

MAHC Committee Response:

Disagree. We feel it is important to stress this safety message.

Comment:

5.7.2.3.3.3.4--Delete section and Add: "In the absence of manufacturer instructions for sanitizing a cartridge filter, the procedure shall be:
1) Soak the cartridge in 1 quart of household bleach per 5 gallons of water for one hour.
2) Remove the cartridge and rinse thoroughly" --

MAHC Committee Response:

Partially agree. Wording edited.

Comment:

5.7.2.3.3.3.5--Delete section

MAHC Committee Response:

Partially agree, wording edited.

Comment:

5.7.2.3.3.3.6--Delete section -- This is unnecessary. If it is rinsed, it can be used right away.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.1.4.1.1--Change Section Header to read "Separate Chemical Storage Room"

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.1.4.1.1-The chlorinators and any cylinders containing CHLORINE gas used therewith shall be located in a chemical storage room, with a door having an inspection window, to

prevent gas leakage. This chemical storage room shall be ~~housed in an ENCLOSURE~~ separated from other EQUIPMENT ROOMs, including the ~~swimming POOL~~aquatic venues, corridors, dressing rooms and other occupied spaces.~~space with a door so installed as to prevent gas leakage and equipped with an inspection window.~~ -- Clarifies the language that this is a chemical storage ROOM as the term enclosure can be outdoors in open air.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.1.4.1.5.1--The fan switch shall be able to be operated from outside of the ~~ENCLOSURE~~chemical storage area. -- Enclosure infers a room. This clarifies it is outside the area.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.2.1.6--Delete section -- There are few on the market with these capabilities. It is already required to record data manually and should suffice.

MAHC Committee Response:

Agreed, deleted.

Comment:

5.7.3.5--All chemical feed systems must be dedicated to a single chemical and clearly labeled to prevent the introduction of incompatible chemicals. They shall:

1) be installed so it cannot operate when the recirculation system is in low or no flow condition circumstances.
2) incorporate failure-proof features so the chemicals cannot feed directly into the AQUATIC VENUE, the venue piping system not associated with the recirculation system, source water supply system, or area within the proximity of the AQUATIC VENUE deck ENCLOSURE under any type of failure, low flow, or interruption of operation of the equipment to prevent BATHER exposure to high concentrations of AQUATIC VENUE treatment chemicals. -- Clarifies language that the low flow condition is for the filtration system and not the chemical feed system. The venue piping system could be the recirculation system and it is often this system where chemicals are injected into the water stream returning to the aquatic venue. Clarified deck as that would address perimeter deck and dry deck and wet deck, which would have patrons and bathers.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.6.1.1--WQTDs utilizing reagents shall be checked for expiration at every use. ~~and the date recorded.~~ -- Overkill to have to record the date of expiration at every use.

MAHC Committee Response:

Disagree. There is no other way for an inspector to know it was actually being checked.

Comment:

5.7.3.6.3--delete section -- Redundant with the line item above.

MAHC Committee Response:

Agreed redundant, but chose to leave in to clarify.

Comment:

5.7.3.7.5--delete section -- Many of these parts are interchangeable

MAHC Committee Response:

Disagree. To help ensure the integrity and proper functioning of the equipment, it should be the Manufacturers' purview to address acceptable replacement parts. Non-equivalent parts should not be substituted.

Comment:

5.7.3.7.7--When an o~~O~~zone s~~S~~ystem is utilized for secondary disinfection, the system~~s~~ shall be monitored and data recorded at a frequency consistent with MAHC Table 5.7.3.7.7. -- It should not be a requirement for those using ozone as a supplemental system but rather only for those where secondary disinfection is required.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.7.8--When a UV system is utilized for secondary disinfection, the system~~s~~ shall be monitored and data recorded at a frequency consistent with MAHC Table 5.7.3.7.8. -- It should not be a requirement for those using ozone as a supplemental system but rather only for those where secondary disinfection is required.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.7.8 Table--The set point should not vary every 4 hours, but should be verified it is set correctly at least once per day.
The information to be recorded should be that related to the disinfection performance of the system. Iron and calcium hardness are only indicators of fouling and yet other items can contribute to fouling such as metals and dissolved solids. Recording too many things is onerous and burdensome. Should limit to: Every 4 hours
1. Flow rate – indicates water is flowing through the system.
2. Intensity – indicates the amount of light exposed to the water. If too low then fouling could be indicated or lamp is faulty, etc.
Daily
1. Set point for intensity – verifies it is correct for the day's operation
Weekly
1. UVT Analyzer Calibration
Annual
1. Calibrate Intensity
2. Calibrate flow meter

MAHC Committee Response:

Partially agree. Modified table.

Comment:

5.7.4.2.1--Daily bulk water samples shall be collected ~~in the middle of the POOL operational day~~prior to opening, according to the procedures in MAHC Section 5.7.4.3. -- Best to make sure the pool is in parameters before opening to the public.

MAHC Committee Response:

Disagree. Testing is done in the morning on sample port but want to ensure pool and sample port line up when heaviest use may occur mid-day.

Comment:

5.7.4.3--The ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATOR shall use the following procedure ~~outlined in MAHC sections to 5.7.4.3.5~~ for acquiring a water sample from bulk water of the POOL. 1) samples shall be obtained from at least 18 inches (45.7 cm) below the surface of the water. 2) The sample shall be obtained from a section of the POOL that has a water depth of between 3 to 4 feet (91.4 cm to 1.22 m) when available. 3) The sample shall be obtained from a location between water INLETS.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.4.3.1, 5.7.4.3.2, 5.7.4.3.3--Delete section -- consolidated into one line item

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.4.3.4 & 5.7.4.3.5--Delete section -- These requirements seem like overkill.

MAHC Committee Response:

Disagree. Sampling rotation can point out circulation problems, etc. that port samples could not.

Comment:

5.7.5.2--FAC or TB and pH shall be tested prior to opening to the public and every two hours at all AQUATIC VENUES using a MANUAL DISINFECTANT FEED SYSTEM in which disinfectant is delivered by a flow through erosion feeder or metering pump without an automated controller.

MAHC Committee Response:

Disagree. The wording is the definition given for the feed system.

Comment:

5.7.5.3--For AQUATIC VENUES using an automated disinfectant feed system, FAC (or TB) and pH shall be tested prior to opening and every four hours ~~at all AQUATIC VENUES using an automated disinfectant feed system~~ -- Clarifies language

MAHC Committee Response:

Agreed. Edited wording as well as that above.

Comment:

5.7.5.4--In-line ORP readings, if such systems are installed, shall be recorded at the same time the FAC (or TB) and pH tests are performed. -- Grandfathered venues need this

MAHC Committee Response:

Agreed. Edited.

Comment:

5.7.6.1--Delete section -- This line is unnecessary as the code language already makes it enforceable.

MAHC Committee Response:

Agreed. Deleted.

Comment:

5.7.6.2--The water in an AQUATIC VENUE shall be sufficiently clear such that the bottom is ~~shall be~~ visible while water is static. ~~at all times~~. -- It is nearly impossible for the bottom to be visible as any disruption of the surface can affect visibility. Mechanical systems that create water movement such as spa jets, waterslide pumps, wave action in rivers and wave pools will disrupt the surface and the surface may not be visible. This language is to clarify that the intent is for the water to be clear to better facilitate viewing the bottom of the aquatic venue.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.7.6.2.1--~~To make this observation, a 4 in x 4 in square (103 cm2) marker tile or~~ In direct line of sight from the pool edge, while water is static, ~~main suction outlet~~a marker tile in a contrasting color to the POOL surface ~~shall be~~ located at the deepest part of the POOL~~.~~ or the main suction outlet shall be visible. For pools less than 10 feet deep, marker tiles, when used, shall be 4 in x 4 in square (103 cm^2) For pools greater than 10 feet deep, marker tiles, when used, shall be 8 in x 8 in square (413 cm2) For waterslide runouts and other shallow AQUATIC VENUES less than 3 feet deep, a reference point such as a fiberglass seam or other feature at the deepest point of the AQUATIC VENUE shall be used instead of a marker tile or main suction outlet. -- Clarify language. Indicates that the marker tile should be in contrasting color, not the main suction outlet as this would require operators to change their main drains and such contrasting colored outlets are not commercially available. ALso, this Allows for runouts and other venues where a main suction outlet is not used and which are shallow.

MAHC Committee Response:

Agreed. Edited and also replicated in new section 4.5.1.2.

Comment:

5.7.6.2.2--delete section -- This is a design and construction requirement and should be moved there.

MAHC Committee Response:

Agreed. Inserted in design and construction.

Comment:

5.7.6.3 & 5.7.6.3.1--Delete sections -- These lines are not needed after the edits completed above.

MAHC Committee Response:

Disagree. Edit above did not include distance.

Comment:

5.8.5.2.1.3--Alternate functional systems or devices are allowed with approval of the regulatory authority in situations when a telephone is not logistically sound, and an alternate means of communication is available~~, which meet the requirements of MAHC Section 5.8.5.2.1.2.~~. -- The reference creates a circular reference that would not comply.

MAHC Committee Response:

Agreed, edited.

Comment:

5.8.5.2.3.3--If management is not present during all hours the AQUATIC FACILITY is open to the public, a~~A~~ permanent sign shall be conspicuously posted and maintained displaying contact information for emergency personnel and AQUATIC FACILITY management. -- Clarifies the requirement is only for those venues where management isn't present. This would be unnecessary for facilities where management is present.

MAHC Committee Response:

Disagree. Contact information to contact the specified staff within the facility is still needed where management is present. Management may be located elsewhere in a facility.

Comment:

5.8.5.3.3--change "patron" to "bather" -- check rest of the code

MAHC Committee Response:

Agreed; edited throughout code.

Comment:

5.8.5.3.7.1--QUALIFIED LIFEGUARDS are responsible for protecting themselves from UV radiation exposure and wear appropriate sunglasses and sunscreen. -- Clarify this is their responsibility.

MAHC Committee Response:

Agreed, edited.

Comment:

5.8.5.4.4--A sign shall be posted outlining the ~~required~~ IMMINENT HEALTH HAZARDs which require aquatic venue closure as ~~items of an AQUATIC FACILITY as~~ defined in this CODE per MAHC 6.6.4 and a telephone number to report the problem to the owner/operator. -- Clarify language

MAHC Committee Response:

Agreed, edited.

Comment:

5.8.5.4.5--in heading, delete "is required" and replace with "is not on duty"

MAHC Committee Response:

Agreed. Have changed to "additional signage".

Comment:

5.9.1.8--undo small caps for "chemical storage area"

MAHC Committee Response:

Disagree. Chemical storage space (changed from area) is a defined term.

Comment:

5.9.2.4.1.1--undo small caps for "superchlorination"

MAHC Committee Response:

Disagree. It is a defined term.

Comment:

6.0.1.4--Federal OSHA Requirements: Hazard Communication Standard~~STANDARD~~ (Employee Right-to- Know) and ~~MSDS~~SDS. Know the location and availabilitystandard of the written program.

MAHC Committee Response:

Agreed, edited.

Comment:

6.0.1.4--Correct OSHA in header

MAHC Committee Response:

Agreed. Edited.

Comment:

6.0.1.5--Know workplace chemicals list and ~~MSDS~~SDS.

MAHC Committee Response:

Agreed, edited.

Comment:

6.0.1.6.1, 6.0.1.7--correct numbering with "Training Topics" header

MAHC Committee Response:

Disagree. Meant to be a sub-topic so numbering is correct.

Comment:

6.1.1.1--A ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATOR shall have completed an operator training course that is recognized by the AHJ. -- Changed name to differentiate from ride operators.

MAHC Committee Response:

Partially agree. The defined term is qualified operator but clarified "of an aquatic facility". We don't even discuss ride operator so it should not be confusing.

Comment:

6.1.1.2--~~STANDARD~~ Standard p~~P~~recautions, Personal Protective Equipment (PPE), and other measures to minimize exposure to chemicals as required by OSHA. This shall include staff training in PPE and respiratory protective devices, when required. -- Respiratory protective devices are not always required depending on the type of chemicals used.

MAHC Committee Response:

Agreed, edited.

Comment:

6.1.2.1.4.10--…. Banning the use of ~~alcohol and~~ glass containers at AQUATIC FACILITIES ,… -- Alcohol is allowed in some facilities and has shown to be managed successfully.

MAHC Committee Response:

Agreed. Alcohol is not banned in facilities in the MAHC.

Comment:

6.1.3.5--...Final exam(s), which at a minimum, covers all of the essential topics as outlined in MAHC Section 6.1.2.1, -- Allow for multiple exams that collectively covers the content. This would allow for multiple modules to be trained and exams issued separately.

MAHC Committee Response:

Agreed, edited.

Comment:

6.1.3.5.1--… Final exam completion is without assistance or aids that are not allowed by the training agency~~may improve exam results~~, and -- Clarifies that the agency may allow an open book but may not allow computers to access search engines.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.2.1.2.7--...CPR manikins(Adult and Child) or equivalent practice equipment, -- Allows for the use of other equipment that may not look like a manikin but allows for the practice of compressions.

MAHC Committee Response:

Disagree. A CPR manikin is accepted as necessary equipment to use in teaching CPR.

Comment:

6.3.1.2.5--Change "onsite responsible supervisor" to "onsite aquatic facility operator" throughout the document

MAHC Committee Response:

Disagree. The term has been defined as being required if there is no on-site qualified operator. We need somebody in charge if the operator is not on-site.

Comment:

6.3.2.1--… Any AQUATIC VENUE ~~with standing water and~~ with an induced current or wave action including but not limited to WAVE POOLS~~, vortex AQUATIC VENUES~~ , waterslide CATCH POOLS, and LAZY RIVERS. -- Could be interpreted that all pools have standing

water and should be guarded. One cannot induce a wave or current without water depth. Also Vortex aquatic venue is undefined and should be removed.

MAHC Committee Response:

Agreed, edited.

Comment:

6.3.2.1--...Any AQUATIC VENUE while it is being used for group training, including but not limited to competitive swimming and/or sports, lifeguard training, exercise programs, and swimming lessons. -- Annex should identify that lifeguards in training can be used as lifeguards during lifeguard training as long as scanning training has been conducted. This is a good opportunity for practice and is utilized with success by some agencies.

MAHC Committee Response:

Disagree. The MAHC believes you can't take chances and has laid out the criteria for certified lifeguards. Trainees do not fulfill these criteria.

Comment:

6.3.3.1.2--After fixing terminology and small caps issues, delete #4

MAHC Committee Response:

Partially agree. Code revised. This issue should be further addressed by a workgroup established by the CMAHC to bring recommendations for a possible code change to the 2015 CMAHC conference.

Comment:

6.3.3.1.3--Delete section and Add: Alternation of Tasks may include any one of the following:
1) Change of zone of bather surveillance where the QUALIFIED LIFEGUARD must walk or be transported to another zone of bather surveillance.
2) Have a period of at least 10 minutes of non-bather surveillance activity such as taking a break, conducting maintenance, or conducting ride dispatch. -- To require a 10 minute break for every hour of bather surveillance, facilities will have to hire 1 extra guard for every 6 guards. This is burdensome and there is no scientific evidence that states a 10 minute break improves the outcomes. There is evidence that changing position from standing to strolling or sitting every 5 minutes does improve vigilance. The Mackworth Clock test showed that vigilance deteriorates after 30 minutes. There is no justification for the requirement. I have edited to allow for rotation to be an alternative task as the lifeguard is refocusing after a break of a few minutes to a new environment. This has been done successfully for many years. I have also kept the original alternative tasks to account for single guard facilities where the lifeguard can take a 10 minute break then resume their duties. Another point is that some venues are catchpools where the bather surveillance is limited to the few people

entering a catch pool and is not as intense as watching a pool full of people. For this reason, a change of lifeguard position is also appropriate.

MAHC Committee Response:

Partially agree. Code revised. This issue should be further addressed by a workgroup established by the CMAHC to bring recommendations for a possible code change to the 2015 CMAHC conference.

Comment:

6.3.4.3.2--#8) If exposed to UV, wear ~~polarized~~ sunglasses and SPF 15 or greater UV protection, -- The need for polarized glasses are for glare not to protect the lifeguard, which is the intent here. Addressing glare is identified in other parts of the code.

MAHC Committee Response:

Partially agree. Code revised. The intent was to have the qualified lifeguard responsible for wearing polarized sunglasses when needed for effective patron surveillance.

Comment:

6.3.4.6.1.1--Remote SAFETY MONITORING systems may be used to aid the operation but not as a substitute for a QUALIFIED LIFEGUARD~~staffing~~ when critical areas such as blind spots in an AQUATIC VENUE or area of a slide cannot be viewed. ~~by QUALIFIED LIFEGUARDS/slide operators.~~ -- Clarify language

MAHC Committee Response:

Agreed wording altered but kept slide operator.

Comment:

6.4.1.1.2--The manual shall at minimum include, but not be limited to the following items: 1) ~~Basic information~~, 2) Aquatic venue descriptions and system information, 3) Facility communication, 4) List of c~~C~~hemicals and system information ~~data~~, and 5) ~~Operation and maintenance policies and instructions, including~~ fecal/vomit and body fluid contamination response protocols, for each AQUATIC VENUE 6) Preventive maintenance plan, 7) ~~and AQUATIC FEATURE at the facility~~. -- "basic information" is vague ..... As a whole, This is a very basic outline and probably needs to be more defined so the operator knows what should be in the manual.These should be reflective of the items listed in the code.

MAHC Committee Response:

Agreed; added.

Comment:

6.4.1.2.2.1--The ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATOR shall insure a ~~'S daily~~ ~~AQUATIC FACILITY~~ preventive maintenance inspection~~s~~ is completed daily, which shall include: -- For large facilities, these inspection points could be done by one or more persons. This change allows for the QAFO to be responsible for making sure it is done.

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.2.1--~~21) Assessing~~ Water clarity is such that ~~glare conditions throughout operating hours to insure~~ the pool bottom ~~and objects in the POOL are clearly~~is visible~~.~~ -- Glare is very difficult to objectively evaluate as it constantly changes. It should be the responsibility of the qualified lifeguard to address glare as they encounter it in their zone of bather surveillance. To rely on a 3rd party to evaluate this disconnects the lifeguard from their responsibility for the zone. Water clarity is within the responsibility of the aquatic facility operator.

MAHC Committee Response:

Agreed, edited. Water clarity assessed elsewhere in Section 5.6.1.2.

Comment:

6.4.1.2.2.1--11) Verify s~~S~~lime and biofilm control measures are in place. ~~has been removed from accessible surfaces of AQUATIC VENUE, slides, and other AQUATIC FEATURES,~~ -- Slime and biofilm are hard to recognize and as such, this requirement identifies that biofilm and slime are actively being addressed.

MAHC Committee Response:

Disagree. Biofilm is easily detected as a slime layer and this is enforceable. Not clear what "biofilm control measures" are.

Comment:

6.4.1.2.2.2--The ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATOR shall insure ~~'S~~ ~~other AQUATIC FACILITY~~ preventive maintenance inspections are~~shall also~~ conducted to include: 1) Required GFCI devices are~~shall be~~ tested monthly, 2) Bonding conductors, where accessible, are~~shall be~~ inspected semi-annually. -- Clarifies that the QAFO makes sure these are done. They could be done by the QAFO or other trained person. In some cases, companies may hire 3rd parties to do this.

MAHC Committee Response:

Agreed, edited. Water clarity assessed elsewhere in Section 5.6.1.2.

Comment:

6.4.1.2.3.1--The ~~QUALIFIED OPERATOR, LIFEGUARD SUPERVISOR, or~~ OWNER/OPERATOR shall make a record of reports of illness or injury where a patron required: ~~all complaints or reports of illness and injury, deaths, and all lifesaving activities that require~~ 1) resuscitation, 2) ~~,~~ CPR, 3) ~~,~~ Oxygen or AED use, or 4) transportation of the patron ~~victim~~ to a medical facility. -- Clarifies that the owner/operator has the responsibility for the facility. Clarifies that these are reports of injury or illness that result in these situations. As stated, one could infer that ALL injuries and illnesses must be recorded. That would be burdensome to record every bandaid and bump.

MAHC Committee Response:

Agreed. Have modified wording and re-structured.

Comment:

6.4.1.2.3.2--Add "Location and Incident" and "mechanism of injury and illness" -- used to determine trends

MAHC Committee Response:

Agreed; added.

Comment:

6.4.1.2.3.3--Delete section -- The AHJ may not want to be notified of every transport to a medical facility nor may it be necessary. Many transports are done because a patron is overcautious and many transports are solely for diagnostic reasons and may not be indicative that an injury has occurred. If the committee feels this is necessary, then please only state those situations in which resuscitation or CPR are done after a water rescue. All others could be previous medical conditions that are not related to the operation of an aquatic facility.

MAHC Committee Response:

Agreed to narrow language so have modified language around the broad injuries and illness wording. The other issues are felt to be important for reporting so that appropriate investigations can be initiated as needed.

Comment:

6.4.1.2.3.4--The ~~AQUATIC FACILITY operator~~Owner/Operator shall ~~also~~ record ~~all lifeguard assists~~activities where the QUALIFIED LIFEGUARD enters the water or uses a reaching pole or other equipment to help a struggling bather.~~PATRON~~. -- Clarifies the owner is responsible for having these activities recorded. The term lifeguard assist is not defined so language has been used to clarify the activity should be recorded. Changed patron to bather to maintain consistency throughout the document that bathers are in venues and patrons are those on decks, not necessarily in venues.

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.3.4.1--remove "that" from "….and reason that assistance was needed"

MAHC Committee Response:

Agreed, deleted.

Comment:

6.4.1.2.4--Delete section -- The annex does not provide information as to why this is required. From a safety standpoint, it is unknown why this would be required to maintain outside of federal requirements. Currently under OSHA, chemical inventories are already required and EHS are required to be reported via Tier Two for quantities above threshold. This line item is redundant and unnecessary.

MAHC Committee Response:

We partially agree. Have deleted the section on quantity since that would be a large burden with no apparent safety value. Chemical listings are required by OSHA which has safety value.

Comment:

6.4.1.2.5--Break up each item into a separate line item

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.5--The time of filter backwash or cleaning ~~logged weekly~~

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.5--If heated, AQUATIC VENUE water temperature ~~when DISINFECTANT and pH tests run,~~

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.5--SECONDARY DISINFECTION SYSTEMS ~~and SUPPLEMENTAL TREATMENT SYSTEMS~~ as outlined in MAHC 5.7.3.8.6 and 5.7.3.8.7, -- Supplemental systems are optional and as such should not be required to be recorded.

MAHC Committee Response:

Agreed. Edited and MAHC numbers aligned with section 5.

Comment:

6.4.1.2.5--...Operating pressures of water recirculation pumps and filters ~~and~~ or the corresponding rate of flow meter readings, -- Systems often have a pressure gauge or a flow meter but not always both.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.5--~~1) The daily attendance at the AQUATIC FACILITY is to be recorded. In POOLS where attendance is not ordinarily recorded, a guest sign in book can be used to track attendance,~~ -- Daily attendance is a difficult measure and it is unknown how this information would be used to improve safety. In resorts and other community pools, tracking attendance may be an estimate only. Unless there is a compelling reason to track for safety purposes, it should be deleted as a requirement.

MAHC Committee Response:

Disagree. Bather numbers contribute to water quality issues and can inform how much water might need to be replaced.

Comment:

6.4.1.2.5--Delete "saturation index" -- Recording the saturation index is an additional step that is not necessary nor does it have a direct impact on safety. It will indicate scaling or corrosive environment, but does not directly affect bathers. pH and water temperature is already required to be within parameters. This is supposed to be a code to address risk to bathers. Technicians that know when a reading is out of parameters will know to make an adjustment.

MAHC Committee Response:

Disagree. Some components can impact pH that impacts disinfectant efficacy. Prefer to keep the record.

Comment:

6.4.1.2.5--~~Maintenance and malfunctioning of equipment, including dates and time of all~~ equipment calibration including WQTDs, -- Already required below.

MAHC Committee Response:

Disagree. They are asking for different information.

Comment:

6.4.1.2.6--Delete section -- The items in 6.4.1.2.2 is required daily. This line item adds to that in unnecessary fashion. It is not necessary to do the inspection after filter cleaning if it has been done daily.

MAHC Committee Response:

Agreed. Deleted. Covered in mentioned section on a daily basis.

Comment:

6.4.1.2.7--All required QUALIFIED LIFEGUARD, LIFEGUARD SUPERVISOR, ~~SAFETY personnel training,~~ or ~~QUALIFIED OPERATOR~~QUALIFIED AQUATIC FACILITY OPERATOR certificates shall be maintained at the AQUATIC FACILITY and made available to AHJ, staff, and POOL PATRONS upon request. -- Unknown as to what training is required.

MAHC Committee Response:

Agreed. Wording deleted.

Comment:

6.4.1.2.7.1--A photocopy of the original certificate ~~shall~~ may be made available in place of the original certificate when employees work at multiple AQUATIC FACILITIES. -- Clarifies this is a relief offered in lieu of the original and not that a copy is required at all locations.

MAHC Committee Response:

Agreed.

Comment:

6.4.1.2.8.2--~~The log shall include a copy of the AQUATIC FACILITY'S STANDARD operating procedures for responding to these contamination incidents.~~ The AQUATIC FACILITY'S STANDARD operating procedures for responding to these contamination incidents shall be readily available for review by the QUALIFIED AQUATIC FACILITY OPERATOR, RESPONSIBLE SUPERVISOR, AQUATIC FACILITY staff, and/or AHJ. -- Language clarifies the intent

MAHC Committee Response:

Agreed. Wording edited.

Comment:

6.4.1.2.8.3--Free residual of disinfectant and pH level at the time of incident; and

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.8.3--~~10)~~Remediation procedures used after the incident including contact time, if applicable~~.~~

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.8.3--Free residual and pH level at the time of reopening the AQUATIC VENUE to the public.

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.8.3--Stabilizer concentration, if used, at the time of reopening

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.8.3--Date and time of reopening -- The log would be indicative of the incident and should include all events. No need to separate the requrem ents.

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.1.2.8.3--~~… Supervisor~~ Onsite Aquatic Facility Operator on duty; -- Identify the person responsible for water quality for the facility.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.8.3--BATHER LOAD in the AQUATIC VENUE ~~at BODY OF WATER~~ at the time of incident ~~(if applicable);~~

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.8.3--~~Incident specifics, including~~ type and form of body fluid observed (for example, diarrheal or formed stool, vomitus, or blood);

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.8.3--Date and time when the area was closed ~~to swimming;~~

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.1.2.8.4--Delete Section

MAHC Committee Response:

Agreed. Deleted.

Comment:

6.4.2.1.2--Such plans shall not exceed the ~~maximum designed BATHER LOAD~~theoretical peak occupancy for the individual AQUATIC VENUES or the AQUATIC FACILITY.

MAHC Committee Response:

Agreed.

Comment:

6.4.2.1.2--Change "bather load" to "occupancy"

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.2.2.2--Delete section -- Redundant with 6.4.2.2.4

MAHC Committee Response:

Agreed. Deleted.

Comment:

6.4.2.2.4--No Diving.

MAHC Committee Response:

Agreed; added.

Comment:

6.4.2.2.4--Diaper changing on the DECK is prohibited.

MAHC Committee Response:

Agreed. Added.

Comment:

6.4.2.2.4--Do not swallow or spit water.

MAHC Committee Response:

Agreed. Added.

Comment:

6.4.2.2.4--No glass or ~~shatterable items~~items which can shatter in the AQUATIC VENUE or on the DECK

MAHC Committee Response:

Agreed. Deleted ”shatterable.”

Comment:

6.4.2.2.4--Signage shall be placed at the entrance of the AQUATIC FACILITY communicating expected and prohibited behaviors to ~~ENCLOSURE that~~ include~~s the following information, or~~ text complying with the intent of the following information:

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.4--Shower before entering the water

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.4--~~No voluntary~~Intentional hyperventilation or extended breath holding activities are dangerous and prohibited

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.4--~~No Lifeguard on Duty: Children under 12 years must have adult supervision (if lifeguard is not provided)~~ -- To be consistent with rules for requiring a lifeguard…… Edited to stipulate this for venues without lifeguards below.

MAHC Committee Response:

Agreed. Kept here but wording edited to be consistent and clarify intent.

Comment:

6.4.2.2.4--delete "bather capacity"

MAHC Committee Response:

Disagree. Design load should be posted so bathers have some idea of capacity as posted in buildings.

Comment:

6.4.2.2.4--Hours of operation; ~~AQUATIC FACILITY use prohibited at any other time (if facility is not a secured facility such as an apartment complex)~~ -- Edited to stipulate this for open facilities in a line item below.

MAHC Committee Response:

Disagree. Does not hurt also clarifying here.

Comment:

6.4.2.2.4--Do not swim if you have open wounds, if you are ill with diarrhea, or have had diarrhea within the past two weeks

MAHC Committee Response:

Disagree. Want to keep messages separate as they are unique messages.

Comment:

6.4.2.2.4.1--Change "no diving sign" to "diving wells" in header

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.4.1--Aquatic Facilities with diving wells may amend requirement #10 to read that diving is not allowed in all pools except for the diving well. ~~AQUATIC VENUES without an approved diving well configuration shall have "NO DIVING", in four inch letters included with the above listed AQUATIC FACILITY rules and the international "No Diving" symbol.~~ -- This is already required as a part of design and construction. As written it sounds like the sign should have 1 inch letters and also have a line in 4 inch letters stating No Diving. Added "No Diving" to the sign and created the exception here.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.4.2--~~**Emergency Signage**~~**Facilities with onsite emergency personnel**

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.2.2.4.3--change "posters" to "unstaffed facilities" in header

MAHC Committee Response:

Partially agree. Made new section to clarify.

Comment:

6.4.2.2.4.3--~~Cardiopulmonary Resuscitation (CPR) and Recreational Water Illness Prevention posters~~ . ~~shall be posted conspicuously in the AQUATIC FACILITY at all times~~. At a minimum, unstaffed facilities shall have, in addition to the MAHC 6.4.2.2.4 requirements, the following information, or text complying with the intent of the following information: AQUATIC FACILITY use prohibited outside of posted operating hours -- This requirement was intended for locations in which there is not staff to respond to CPR incidents or to enforce behaviors that prevent RWIs.

MAHC Committee Response:

Partially agree. The CPR posters were intended for unstaffed. RWI posters were intended for all facilities.

Comment:

6.4.2.2.4.4--change "Multi Aquatic Venues" to "Facilities without Lifeguards"

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.2.2.4.4--~~For multi-VENUE AQUATIC FACILITIES, all signage items in MAHC 6.4.2.2.4, or text complying with the intent of the information, shall be posted in full view at the entrance to the AQUATIC FACILITY.~~ At a minimum, facilities without lifeguards shall have, in addition to the MAHC 6.4.2.2.4 requirements, the following information, or text complying with the intent of the following information: Children under 14 years must have adult supervision -- This is already stated in the edits above. By stating the entrance to the aquatic facility, it addresses the venue and the facility.

MAHC Committee Response:

Agreed. Moved.

Comment:

6.4.2.2.4.5 & 6.4.2.2.4.6--Delete sections -- Having the sign present at the entrance of the facility suffices. Any venue-specific signage can be placed at the venue itself.

MAHC Committee Response:

Partially agree. Deleted spa section since it is repetitive. Edited other section about multiple aquatic venues since this is the section saying that certain messages should be at each venue as well. It may be more likely that bathers read this information at the venue vs. entrance.

Comment:

6.4.2.2.5--At a minimum, AQUATIC VENUES with moveable bottom floors, shall have, in addition to the MAHC 6.4.2.2.4 requirements, the following information, or text complying with the intent of the following information: ~~At a minimum, AQUATIC VENUES with moveable bottom floors shall have the following information, or text complying with the intent of the following information~~:

MAHC Committee Response:

Agreed, edited.

Comment:

6.4.2.2.5--Should renumber to be a subset of the sign message line item as these are amendments or exceptions to the signage required at all facilities.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.6--#4) change age from 12 to 14 -- Changed age to 14 to be consistent with other parts of the code.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.6--#2) delete "narcotics or other" -- Enforcing the age of 5 requirement will be difficult in some settings, but is understood to be a safety concern. WI uses the age of 6. 6 is about 42 inches in height. Removed unnecessary term of narcotics.

MAHC Committee Response:

Agreed. Edited. Age restriction is to protect younger children who cannot control their body temperatures, the same as older children and adults.

Comment:

6.4.2.2.6--delete #5 -- There is no scientific evidence to justify that otherwise healthy and competent adults cannot enjoy a spa alone. The sign can warn of danger but should not infringe on the freedoms of persons to enjoy a spa alone.

MAHC Committee Response:

Disagree. Solo use of high temperature areas, particularly in conjunction with alcohol use is a clear risk factor for drowning.

Comment:

6.4.2.2.7--Wash hands before returning to the pool. -- Added to emphasize the hygiene impact of not washing hands.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.4.2.2.7--Do not ~~poop or pee in the water~~ use the pool as a bathroom. -- There are some that feel this is American slang and should not be included in this section stating that to use the pool as a toilet is universally known as unacceptable. Some also feel that due to the prevalence of this practice even amongst competitive swimmers that it is necessary to state this. For this reason I have left the line in this section but do ask the committee to review it.

MAHC Committee Response:

Disagree; open to interpretation (is this peeing or pooping. However, text says text conveying intent so negotiable).

Comment:

6.4.2.2.7--Delete "do not swim when ill with diarrhea" and "do no swim with open wounds and sores"

MAHC Committee Response:

Disagree. The more bathers see these messages, particularly in the bathroom, the better.

Comment:

6.4.2.2.7--...Do not swim if you have open wounds, if you are ill with diarrhea, or have had diarrhea within the past two weeks -- Edited to be consistent with signage at the entrance of the aquatic facility.

MAHC Committee Response:

Disagree. This is a subset of items in addition to main sign so no need to repeat.

Comment:

6.4.2.2.8--Do not enter the water ~~swim~~ if ill with diarrhea. -- Makes language consistent with previous line items.

MAHC Committee Response:

Disagree. Keep "swim" to be consistent. Facilities can decide how to word if intent is kept.

Comment:

6.4.2.4.1--Delete section -- The group felt this statement was vague and unclear. The signage requirements above notifying bathers to shower and to not use the pool as a bathroom would achieve the intent of this line item.

MAHC Committee Response:

Disagree. This is the opportunity for owners/operators to educate patrons and start to transition them to understanding that aquatic venue use must change and hygiene/behavior must change. At this time, the MAHC is trying to not be prescriptive and allow facilities to exhibit their creativity and ingenuity. The bathers are creating many of these issues and must be engaged to help prevent it in the future.

Comment:

6.4.2.4.2--The ~~permit to operate and the~~ results of the most recent AHJ inspection of the facility, or copies thereof, shall be available for inspection by the ~~posted for~~ public ~~view~~ at the AQUATIC FACILITY during normal operating hours. -- The posting requirement is listed elsewhere. Either consolidate and delete the other requirement or delete this phrase here. Also, Allows for copies to be at the facility so the originals can be filed at a central location. Allows for making it available rather than posting. The environment is not always conducive to posting paper.

MAHC Committee Response:

Partially agree. Deleted permit to operate since it is stated elsewhere. Disagree with wording change since the intent is that the inspection results are posted in a conspicuous location for the public to view without having to ask (wording could be interpreted to mean this). They should not have to ask for it any more than one does in a restaurant.

Comment:

6.5.2.3--POOL water that has been contaminated by feces~~, vomit, or blood~~ shall be treated as follows: -- According to the CDC “Chlorine kills germs found in blood and CDC is not aware of any instances in which a person has become infected with these germs after being exposed to a blood spill in a pool”. CDC also mentions with respect to swimmer’s perception “there is no

public health reason to recommend closing the pool after a blood spill. However, some pool staff choose to do so temporarily to satisfy patrons".

MAHC Committee Response:

Agree. Rest of wording in section makes it clear this is not intended for blood, error of inclusion. It does apply to vomit so this has not been deleted.

Comment:

6.5.2.3--Check to ensure that the water's pH is 7.5 or lower and adjust if necessary or increase the contact time 30%; 2) ~~Verify and maintain water temperature at 77°F (25°C) or higher; -- It is important to start the mitigation process quickly and taking the time to adjust pH when in the range of 7.2-7.8 may be unnecessary. Rather, guidance for contact time to increase may be a better alternative. The percentage of HOCL at pH levels is known and CT values could be adjusted to account for that difference. The same goes for pool temperature. Perhaps better to create alternatives for when these parameters are not met. In general, a pool at less than 77 degrees would be uncomfortable and not likely to be open.~~

MAHC Committee Response:

Disagree. A high pH could greatly impact the protocol and it is not clear that the titration curve can be directly extrapolated from for all pathogens. This would need to be tested to see if it is this can be done and would require more than a blanket percent increase as requested. Agreed that other alternatives need to be sought.

Comment:

6.5.3.2--#2) How is this verified in the field to a point where an operator or a health department can verify without specifying a test method that is universally accepted? The current test involves collecting a sample at a certain temperature, maintain it and send to a certified lab for analysis which takes over 24 hours. .

MAHC Committee Response:

Agreed. Have added the term theoretical in front of thought. This is based on a theoretical calculation using the assumed numbers of oocysts outlined in 4.7.3.3.2.4. No actual Cryptosporidium testing is recommended. CDC does not recommend testing after hyperchlorination either.

Comment:

6.5.3.5--Formed-stool, diarrheal-stool, vomit, ~~or blood~~ contaminated water in a brominated POOL shall have CHLORINE added to the POOL in an amount that will increase the FREE CHLORINE RESIDUAL to the level specified for the specific type of contamination for the specified time. -- 6.5.3.4 states blood is not a risk

MAHC Committee Response:

Agreed, edited.

Comment:

6.5.4.1--If a bodily fluid such as feces or ~~,~~ vomit~~, or blood,~~ has contaminated a surface in an AQUATIC FACILITY, facility staff shall limit access to the affected area until remediation procedures have been completed. -- Creates consistency with items above.

MAHC Committee Response:

Disagree. The MAHC has now switched to speaking about blood on surfaces where the infection potential is different than in chlorinated aquatic venue water. Appropriate clean-up is now required and different.

Comment:

6.5.4.4--1) A 5,000 mg/L bleach DISINFECTION solution, such as a 1:10 dilution of fresh household bleach with water may be used and allowed to stay on the affected area for 10 minutes or -- CDC website references 10 minute contact time. The 20 minute contact time seems arbitrary and overkill.

MAHC Committee Response:

Disagree. Surface spills can be very concentrated organic material hence the 20 minutes; CDC Healthy Swimming website also recommends 20 minutes.

Comment:

6.5.4.4--2) An equivalent EPA REGISTERED disinfectant that has been approved for body fluids DISINFECTION, allowed to stay on the affected area as indicated on the disinfectant label directions.~~.~~ 3) ~~DISINFECTION solution outlined in MAHC Section 6.5.4.4.1 or 6.5.4.4.2.~~ -- Consolidated the information to one line item.

MAHC Committee Response:

Partially agree. Edited to consolidate.

Comment:

6.5.4.4.1-delete section

MAHC Committee Response:

Agreed. Edited.

Comment:

6.5.4.4.2--delete section

MAHC Committee Response:

Agreed, edited.

Comment:

6.5.4.5--delete section

MAHC Committee Response:

Disagree. Want to keep the section in stepwise format.

Comment:

6.6.1.2--replace #1) with "inspect, investigate, or evaluate for compliance with this CODE,"

MAHC Committee Response:

Agreed, edited.

Comment:

6.6.1.2--#4) NOTE: There is a concern that samples taken may not have the correct storage or chain of custody and could be an issue. Usually samples are taken by a certified laboratory. One comment was received that the AHJ should be required to provide feedback to the operator as this code does not specify that a report is required to be given to the owner.

MAHC Committee Response:

Agreed. This needs to be addressed in guidance to the regulator that will be coming for public comment again in 2014 (portions removed from the regulatory module that spoke to regulatory programs).

Comment:

6.6.1.2.1--Delete section -- Redundant with the line above. Incorporated one line as it was a better descriptor.

MAHC Committee Response:

Agreed. Sections merged.

Comment:

6.6.3.1--Delete "Application for Aquatic Facility Exemption Status" -- There is no other reference to this status.

MAHC Committee Response:

Agree. This section has been deleted as it speaks to AHJ and should be in regulatory program guidance.

Comment:

6.6.3.1--In general, this section should not be necessary as the AHJ would give itself it's rights to approve as a part of their code.

MAHC Committee Response:

Agreed. Section deleted.

Comment:

6.6.4.1--14) Failure to provide and maintain a barrier to inhibit unauthorized access, when required, ~~n ENCLOSURE~~ around the AQUATIC VENUE. ~~area that will inhibit unauthorized access to the AQUATIC VENUE;~~ -- Clarifies that not all aquatic venues require a barrier around it.

MAHC Committee Response:

Agreed, edited.

Comment:

6.6.4.1--16) add "grate" after "suction outlet"

MAHC Committee Response:

Agreed, edited.

Comment:

6.6.4.1--19) delete this line item -- This is an overly broad statement, vague and difficult to enforce.

MAHC Committee Response:

Disagree. This is left for the AHJ to define any other items needed. These would need to be outlined by the AHJ.

Comment:

6.6.5.2--When a placard is used, it shall be conspicuously posted at each entrance leading to the ~~AQUATIC FACILITY and/or~~ AQUATIC VENUE. -- The violation is associated with the venue not the facility.

MAHC Committee Response:

Agreed, edited.

Comment:

6.6.5.4--The AHJ shall inspect the premises, within ~~two working days~~ 24 hours of notification that the hazard has been eliminated, to remove the placards after verifying correction. -- There should be a statement in the annex that the AHJ should provide an opportunity for immediate correction of the condition to allow for reopening of the venue. It should also give the opportunity for the AHJ to accept proof of compliance by electronic means to allow reopening of a venue. This would assist health departments in rural areas where travel is restrictive. The idea is to make the pool safe and to keep it open, not burden the operator to be at the mercy of the AHJs schedule and resources.

MAHC Committee Response:

Disagree. Kept at 2 working days; however, code revised to allow AHJ to inspect or accept "other evidence of correction." Code revised to clarify placarding when public health hazards remain uncorrected.

Comment:

6.6.6.1.2--Delete section -- Redundant with line below

MAHC Committee Response:

Agreed. Deleted.

Comment:

6.6.6.2--Each day, or any part thereof, during which a willful violation ~~violation~~ of this CODE exists or persists shall constitute a separate violation of this CODE. -- If a venue is closed and the operator is working on a solution, it should not be construed as a continued violation. The term willful was added to clarify.

MAHC Committee Response:

Agreed. Edited and added text to annex.

Comment:

6.6.7--delete entire section -- First, there is a reference to “this article”. “Article” is not a term defined or used in this CODE. Many of the provisions of this Code have very little impact on public health or safety and no correlation to any acceptable definition of public nuisance. For example, the loss of a certification of one lifeguard (who is properly certified) does not constitute a public nuisance. The term public nuisance brings with it potential additional private legal remedies for patrons and others which could lead to any number of very minor but costly civil actions. No Code should ever ruin an aquatic venues reputation for minor violations.

MAHC Committee Response:

Agreed. Deleted. Health hazards defined earlier.

Comment:

6.6.8--Delete section -- Fees do not belong in model code language. This is about safety, not about fees.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Acronyms--Delete AHAC -- not used in the MAHC

MAHC Committee Response:

Agreed, deleted.

Comment:

Acronyms--Delete MSBL -- Not used in the MAHC

MAHC Committee Response:

Agreed, deleted.

Comment:

Acronyms--Delete UVT -- not used in MAHC

MAHC Committee Response:

Agreed, deleted.

Comment:

Acronyms--Change MSDS to SDS -- this is the current terminology from EPA

MAHC Committee Response:

Agreed. Edited. Hazard Communication Standard has been revised by OSHA to align with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), the result of which will include substantial changes to the MSDS Hazard Chemical change to the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). See https://www.osha.gov/dsg/hazcom/

Comment:

Acronyms--Delete VFD -- Not used in document

MAHC Committee Response:

Disagree, is being used.

Comment:

Acronyms--Delete AHJ -- Not used in MAHC

MAHC Committee Response:

Disagree, referenced throughout.

Comment:

Acronyms--Delete NSF -- Not referenced in document

MAHC Committee Response:

Disagree, referenced throughout.

Comment:

Acronyms--Delete NRTL -- not used in MAHC

MAHC Committee Response:

Disagree, used in code.

Comment:

Glossary--Perimeter Deck -- DELETE; Redundant with the definition of “deck” above.

MAHC Committee Response:

Agree

Comment:

Glossary--Pool Deck -- DELETE; Redundant with the definition of “deck” above.

MAHC Committee Response:

Agree

Comment:

Glossary--"Surf Pool" means any pool designed to generate waves dedicated to the activity of surfing on a surfboard or analogous surfing device commonly used in the ocean and intended for sport as opposed to general play. -- Added this term as it is different from a wave pool.

MAHC Committee Response:

Agree. A definition has been added.

Comment:

Glossary--**"Agitated Water"** means an aquatic venue with mechanical means (aquatic features) to discharge, spray, or move the water's surface above and/or below the static water line of the aquatic venue. Where there is no static water line, movement shall be considered above the deck plane . -- This term is used in the peak occupancy calculation and therefore, the term in that line item should not be "vertical use water".

MAHC Committee Response:

Agreed.

Comment:

Glossary--**"Theoretical Peak Occupancy"** ADD -- "Theoretical Peak Occupancy" means the anticipated peak number of bathers in an aquatic venue or the anticipated peak number of occupants of the decks of an aquatic facility. This is the lower limit of peak occupancy to be used for design purposes for determining services that support occupants. -- Bather Load definition is only used for hygiene. The original definition was for peak occupancy as it relates to design for ventilation. A table identifying the densities referred to here was removed in this draft and should be put back into the document. This is also a definition, not to be used for the code language. We have added a new definition to be used in a variety of ways throughout the document in a more flexible way. TPO can be used for hygiene, water discharge, ventilation, etc.

MAHC Committee Response:

Agreed.

Comment:

Glossary--**"Purge"** means to bring in outdoor air at the same rate required for theoretical peak occupancy until one complete air exchange of the indoor aquatic facility air volume has been achieved. -- Create consistency with terms used in the edit of the document.

MAHC Committee Response:

Agreed.

Comment:

Glossary--**"Aquatic Venue"** means an artificially constructed or modified natural structure where the general public is exposed to water intended for recreational or therapeutic purpose. Such structures do not necessarily contain standing water, so water exposure may occur via contact, ingestion, or aerosolization. Examples include swimming pools, wave pools, surf pools, lazy rivers, spas (including spa pools and hot tubs), therapy pools, waterslide catch pools , spray pads and other interactive water venues. -- Surf pools differ in design from traditional wave pools.

MAHC Committee Response:

Agreed; added.

Comment:

Glossary--"Aquatic Venue" means an artificially constructed or modified natural structure where the general public is exposed to water intended for recreational or therapeutic purpose. Such structures do not necessarily contain standing water, so water exposure may occur via contact, ingestion, or aerosolization. Examples include swimming pools, wave pools, surf pools, lazy rivers, spas (including spa pools and hot tubs), therapy pools, waterslide catch pools , spray pads and other interactive water venues. -- Needed for clarity. This is only the catch pool, not the slide itself.

MAHC Committee Response:

Agreed; added.

Comment:

Glossary--Separation barrier -- delete; Not used in document

MAHC Committee Response:

Agreed, deleted.

Comment:

Glossary--Interactive Water Play Collection Tank -- DELETE; term not used in the MAHC

MAHC Committee Response:

Agreed, deleted.

Comment:

Glossary--**"Inlet"** means wall or floor fittings where treated water is returned to the pool.

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--**"No Diving Marker"** means a sign with the words "No Diving" and the universal international symbol for "No Diving" pictured as an image of a diver with a red circle with a slash through it. -- Clarify consistency with the code language in 4.5.20.4

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--**"Trihalomethanes or THM"** means chemical compounds in which three of the four hydrogen atoms of methane (CH4) are replaced by halogen atoms. THMs are environmental pollutants and many are considered carcinogenic.

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--**"Turnover" or "Turnover Rate"** means the period of time, usually expressed in hours, required to circulate a volume of water equal to the capacity of the aquatic venue.

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--**"Zero Depth Entry"** means a sloped entry into a pool from deck level into the interior of the pool as a means of access and egress. -- Zero depth is not about pool width but about the feature in which the pool entry slopes from deck level into the pool.

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--**"Exit Gate"** means an emergency exit is a gate or door allowing free exit at all times. -- Exit "door" was used only once and included the term gate. Removed the term door in the body for consistency. The requirement to be conspicuously marked should be in the body of the code. We have moved that language to the appropriate section.

MAHC Committee Response:

Agreed, fixed in body and definition.

Comment:

Glossary--**"Flume"** means the riding channels of a waterslide which accommodates riders using or not using mats, tubes, rafts, and other transport vehicles as they slide along a path lubricated by a water flow. -- Best to use the ASTM definition of waterslide but to just describe the flume, one should not use indeterminate words like "deep" or "high" without validating what that means.

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--**"Flat Water"** means an aquatic venue in which the water line is static except for movement made by users. Diving spargers do not void the flat water definition.

MAHC Committee Response:

Agreed. Added.

Comment:

Glossary--"Stadium Seating" means an area of high-occupancy seating provided above pool level for observation. Generally bleacher style at a higher elevation than the pool surfaces. -- Per the above statement, the term Theoretical Peak Occupancy should be used as it is calculating what is expected and not what the actual bather load is. -- It is unclear what Wave Pools and Action Rivers fall under unless the terms return to the original language from the first public comment draft. -- "Horizontal water" may describe what is likely to be occurring in flat water pools, but it does not address the risk factor, which is the point of the MAHC - to address risk. The original intent of this language was to indicate that flat water does not contribute disinfection byproducts to the air like agitated water does. Agitated water is that where mechanical means are constantly dispersing DBPs into the air. For this reason, the vocabulary terms should remain as Flat water and Agitated Water. -- This section also should include the density factors for decks and stadium seating as those will be needed for calculating air and for other support services. This also supports the need for the term "theoretical peak occupancy" as it relates to the facility and not just the load in the aquatic venue. -- Added density factors for waterslide catch pools which is dependent on the peak occupancy established by the manufacturer. Using square footage for the catch pools is not practical. Also added interactive density factors as square footage of water is not practical but the amount of space exposed to water where users can occupy it is a better way to calculate the occupancy. ASTM F1487 for playground use states 1 person for every 10 sq ft as the lower limit. -- Added to create consistency with TPO calculation.

MAHC Committee Response:

Agreed. Added to TPO definition.

Comment:

Glossary--**"Accessible Route"** means access/egress standards as defined by 2010 ADA Standards for Accessible Design -- The prior ADAAG (ADA Accessibility Guidelines) is now known as the "2010 ADA Standards for Accessible Design", effective as of March 15, 2012

MAHC Committee Response:

Agreed. Changed in definition and in text.

Comment:

Glossary--**"Oxidation"** means the process of changing the chemical structure of water contaminants by reducing the number of electrons of the contaminant, which allows the contaminant to be more readily removed from the water or made more soluble in the water. It is the "chemical cleaning" of pool water. Oxidation can be achieved by common disinfectants (e.g., chlorine, bromine), secondary disinfection/sanitation systems (e.g. ozone) and oxidizers (e.g. potassium monopersulfate). -- Not always about increasing the number of oxygen atoms although often that is what is happening.

MAHC Committee Response:

Agreed. Clarified wording.

Comment:

Glossary--Delete AHAC -- This is not used in the body of the MAHC. Only as an acronym.

MAHC Committee Response:

Agreed. Definition Deleted.

Comment:

Glossary--"Bather Load" means the number of bathers in an aquatic venue at any given time. -- Need to differentiate the bather load at a present time from the theoretical peak occupancy which is a calculation of the anticipated peak occupancy and is used as the lower limit for design purposes.

MAHC Committee Response:

Agreed. Definitions changed.

Comment:

Glossary--**"Enclosure barrier"** -- DELETE Not used in the document

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Exercise pool -- DELETE; This term is not used in the body of the MAHC.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Flume Valleys or Dips -- DELETE; No use of this term after edits completed

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Generally Accepted Practice -- DELETE; not used in the MAHC

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Isolation -- DELETE; This term is not used in this document as described. Isolation is a dictionary term and does not need to be defined here.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--**"Lazy River"** means a channeled flow of water of near−constant depth in which the water is moved by pumps or other means of propulsion to provide a river−like flow that transports bathers over a defined path. A lazy river may include play features and devices. A leisure river may also be referred to as a tubing pool, leisure river or a current channel. -- Leisure pool can be interpreted as any pool. The common term is leisure river.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Leisure Rivers -- DELETE; This term is not used other than as a synonym to Lazy River. Does not need to be defined.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Natatorium-- DELETE; Removed this term as it was redundant with Indoor Aquatic Facility. I replaced all “natatorium” with indoor aquatic facility.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Nationally Recognized Testing Laboratory -- DELETE; Term not used in MAHC

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--**“Peninsula or Wing Wall”** means a structural projection into a pool intended to provide separation within the body of water. -- DELETE remainder of the definition. These are code items and are defined already in the code.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Performance Measures -- DELETE; term not used in the Code

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Plunge Pool -- DELETE; This term is not used in the document. Catch pool is already defined. There was one reference to plunge pool but should read as catch pool. That edit was made.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Portable Vacuum System -- DELETE; term not used in the document

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Runout slide -- DELETE; term not used in MAHC

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Underwater shelf -- delete; not used in the MAHC

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Vertical Use Water -- DELETE; redundant with agitated water definition

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--Manual Disinfectant Feed System -- DELETE; To simplify the document I moved this language to the code requirement as there was only one reference to the term.

MAHC Committee Response:

Agreed. Deleted and incorporated in text.

Comment:

Glossary--**EPA Registered"** means all products regulated by the U.S. Environmental Protection Agency (EPA; http://www.epa.gov). EPA registered products will have a registration

number on the label, “EPA Reg No.” followed by a series of numbers. -- The only reference to this is related to an EPA registered disinfectant. It is not related to pesticides.

MAHC Committee Response:

Agreed. Deleted as could be confusing although this is an EPA definition.

Comment:

Glossary--Integral vacuum system -- Delete; Moved the contents to the code. No need to define here when only used once in the code.

MAHC Committee Response:

Agreed. Deleted here and wording moved to code section.

Comment:

Glossary--Interactive Water play features -- DELETE; term not used in the MAHC

MAHC Committee Response:

Agreed. Deleted here and wording moved to code section.

Comment:

Glossary--High Risk Venue -- Delete; This is not a term used in the MAHC. There is nothing that states why these pools are high risk. It is not prudent to separate these as any water environment may be high risk as persons can drown in as little as 2 inches of water. Also, well managed wading pools and spas are less risky than poorly managed swimming pools.

MAHC Committee Response:

Agreed. Deleted. The term used in the MAHC is increased risk and this is substantiated.

Comment:

Glossary--**“Circulation Path”** means an exterior or interior way of passage from one part of an aquatic facility to another for pedestrians, including, but not limited to walkways, pathways, decks, and stairways. This must be considered in relation to the ADA. -- ADA is the correct use and are enforceable.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Chemical Storage Space"** means a space in an aquatic facility used for the storage of pool chemicals including, at a minimum, acids, fertilizers, salt, oxidizing cleaning materials, other corrosive or oxidizing chemicals, or pesticides. -- Creating confusion when addressing exterior chemical storage space.

MAHC Committee Response:

Agreed. Edited.

Comment:

*Glossary—"***Dry Deck"** means all pedestrian surface areas within the aquatic facility enclosure not subject to frequent splashing or constant wet foot traffic. The dry deck is not the perimeter deck or pool deck, which connect the pool to adjacent amenities, entrances, and exits. Landscape areas are not included in this definition.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Diaper-changing station"** means a hygiene station that includes a diaper-changing unit, sanitizing equipment and hand-washing equipment. -- This should be a definition and the code requirements should be stated elsewhere.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Diaper-changing unit"** means equipment including a surface for placing a child upon while changing the child's diaper. -- Changed the definition to describe what it is. Safe and approved are vague terms with no criteria to establish what defines them.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Dry Deck -- Defined above in "deck".

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Free Chlorine Residual" OR "Free Available Chlorine"** means the available disinfectant in the water. It is the portion of total chlorine that is not combined chlorine and is available as disinfectant. When chlorine is added to water, hypochlorous acid is produced in either the molecular state (HOCl) or the ionized state (hypochlorite ion (OCl-) plus hydrogen ion (H+)), and a by-product specific to the type of chlorine is produced. The pH of the water determines the amount of hypochlorous acid in each state. HOCl is a very effective bactericide and is the active available chlorine disinfectant in the water. OCl- is also a bactericide, but acts more slowly than HOCl. Thus chlorine is a much less effective bactericide at high pH. The sum of HOCl and OCl- is referred to as "free chlorine" in pool water. The hypochlorous acid that remains in pool water uncombined with any other chemical is called "free chlorine residual." Free chlorine residual must be maintained for adequate disinfection. -- Other chlorine compounds are created with chlorine that aren't always ammonia.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Hand Wash Station"** means a location which has a hand wash sink, adjacent soap with dispenser, hand drying device or paper towels and dispenser, and trash receptacle.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Horizontal Use Water -- DELETE; This term is no longer used after the edits of this document.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Hydraulically Apportioned -- DELETE; term is not used in the MAHC

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"mg/L"** means milligrams per liter and is the equivalent metric measure to parts per million (ppm). -- Clarification purposes only

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Perimeter Gutter System"** means the alternative to skimmers as a method to remove water from the pool's surface for treatment. The gutter provides a level structure along the pool perimeter versus intermittent skimmers.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Pool"** means a subset of aquatic venues designed to have standing water for total or partial bather immersion.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Rinse Shower"** means a shower typically located in the pool deck area with ambient temperature water. The main purpose is to remove dirt, sand, or organic material prior to entering the aquatic venue to reduce the introduction of contaminants and the formation of disinfection by-products

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Runout"** means that part of a waterslide where riders are intended to decelerate and/or come to a stop. The run-out is a continuation of the waterslide flume surface. -- removed spacing between "run" and "out" To create consistency with the spelling of the term in the body of the document.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Safety Plan"** means a written document that has procedures, requirements and/or standards related to safety which the aquatic facility staff are to follow. These plans may

include training, emergency response, and operations procedures. -- Only need to identify the definition, not the detail of what is included in the code.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Sanitize"** means reducing the level of microbes to that considered safe by public health standards. This may be achieved through a variety of chemical or physical means including chemical treatment, physical cleaning, or drying.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Secondary disinfection systems"** means those disinfection processes or systems installed in addition to the standard systems required on all aquatic venues. -- Code requirements belong in the body of the code. This requirement is already stated in the body of the code.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Superchlorination"** means the addition of large quantities of chlorine-based chemicals to kill algae, destroy odors, or improve the ability to maintain a disinfectant residual. This process is different from Hyperchlorination, which is a prescribed amount to achieve a specific CT value whereas Superchlorination is the raising of free chlorine levels for water quality maintenance. -- Added a line to clarify the difference between Hyperchlorination and Superchlorination.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--**"Supplemental treatment systems"** means those disinfection processes or systems which are not required on an aquatic venue for health and safety reasons. They may be used to enhance overall system performance and improve water quality. -- delete; redundant

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Wing wall/peninsula -- DELETE; redundant with previous definition

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Diaper-aged children -- Delete the term. Rather than define an additional term, it would be best to replace “diaper-aged children” to “children less than 5 years of age”. Those changes have been suggested in the edits to this document. Suggest annex language that states the risk is associated with children less than 5 years of age, which tend to be incontinent.

MAHC Committee Response:

Agreed. Edited in code and annex.

Comment:

Glossary--“Waterslide ” means an attraction where users slide down from an elevated height to a catch pool or runout through a fabricated channel with flowing water. -- Waterslide is one word. Changed 29 from water slide to waterslide; Unnecessary to include disinfection facilities as part of the definition of a waterslide. Preferable to use the ASTM definition of a waterslide, but this definition works to give the reader of the MAHC context.

MAHC Committee Response:

Agreed. Edited throughout text to one word.

Comment:

Glossary--**“Breakpoint Chlorination”** means the conversion of inorganic chloramine compounds to nitrogen gas. When chlorine is added to water containing ammonia (from urine, sweat, or the environment, for example), it reacts with the ammonia to form chloramines. If more chlorine is added, the total residual chlorine continues to rise until the concentration reaches a point that forces the reaction with ammonia to go to rapid completion. In this reaction, the inorganic chloramines are converted to dichloramine, then to nitrogen trichloride, and then to nitrogen gas. Compounds of nitrogen and chlorine are released into the water, and the apparent residual chlorine decreases. The point at which the drop occurs is referred to as the “breakpoint”. The amount of free chlorine that must be added to the water to achieve breakpoint chlorination is approximately ten times the amount of combined chlorine in the

water. As additional chlorine is added, all inorganic combined chlorine compounds disappear, resulting in a decrease in eye irritation potential and “chlorine odors.” -- Where is the science that says this is occurring? The current science states once it turns to NCl3 it off-gasses from the pool, not that it turns into Nitrogen and then off-gasses.

MAHC Committee Response:

Agreed. Edited wording to clarify that off-gassing is also occurring.

Comment:

Glossary--**“Aquatic Facility Enclosure”** means an uninterrupted barrier surrounding an aquatic facility intended to prohibit unauthorized entry. -- The definition only mentions the facility.

MAHC Committee Response:

Agreed. Have added venue.

Comment:

Glossary--Qualified person -- delete; Removed this definition as it is used only once after editing. The content of the definition was moved to the singular location where the term is used.

MAHC Committee Response:

Agreed. Term has been deleted in code body.

Comment:

Glossary--Increased risk venue -- DELETE; To indicate one venue is more risky than another venue is unnecessary as all pools have an inherent risk related to drowning in as little as 2 inches of water. For any venue with water in which people are immersed, there is public health risk. It should not be the role of the MAHC to determine what has a higher risk than other venues as that will affect their insurability. A low risk venue under this definition, yet poorly managed, can be more of a risk than venues perceived under this definition as high risk with excellent management. When alternative or different requirements are needed "increased risk" facilities, those different requirements should be specified and applied to specific facilities in the appropriate sections as opposed to applying a generic definition that may or may not be applicable in each individual circumstance.

MAHC Committee Response:

Disagree. It is the MAHCs role to identify areas of increased risk as part of public health protection. The user population and the increased incidence of disease and potential for more severe outcomes warrant using this term to identify those venues needing additional treatment such as secondary disinfection treatment.

Comment:

Glossary--Safety -- DELETE; This is a dictionary term and should not be defined here.

MAHC Committee Response:

Disagree. Need to keep as a specific use.

Comment:

Glossary--Water replenishment System -- DELETE; After editing the relevant section, this definition is no longer needed. It was listed only once as a title but not used in the body of the document as a term needing to be defined.

MAHC Committee Response:

Disagree. Need to keep it for reference purposes.

Comment:

Glossary--Enclosure -- Delete; Enclosure is a generic term and there is already a term for aquatic facility enclosure.

MAHC Committee Response:

Disagree. Prefer to keep to clarify.

Comment:

Glossary--**"Substantial Alteration"** means the alteration, modification, or renovation of an aquatic venue where the total cost of the work exceeds 50% of the replacement cost of the aquatic venue -- It is unnecessary to list both indoor and outdoor facilities when it applies to both.

MAHC Committee Response:

Disagree. The definition is different for each (indoor or outdoor) since the MAHC is not intending that putting a new spa in an indoor facility means they have to redo all the ventilation and plumbing in the entire facility vs. an outdoor setting where this would not come into play.

Comment:

Glossary--Structural Crack -- A structural crack can be in any structure not just a pool surface. This is a general term and best to remove it or change the name to be more specific.

MAHC Committee Response:

Disagree. This definition is meant to be specific.

Comment:

Glossary--**"Onsite Aquatic Facility Operator"** means an individual physically located at the aquatic facility who is responsible primarily for the operation and maintenance of the critical water and air quality systems of the aquatic facility when a "Qualified Aquatic Facility Operator" is not on-site at an aquatic facility. -- The term supervisor is confusing as there is a qualified lifeguard supervisor. The operative word seems to be "onsite" and the duties are limited so the definition has been adjusted here.

MAHC Committee Response:

Disagree. This individual is already defined as a "responsible supervisor" and is meant to be on-site.

Comment:

Glossary--**"Public Water System"** means water systems in which the local government manages the treatment of water so it may be considered potable. -- Delete term "Supply" as it is not in the code. Also, The original definition was so complicated one would need to define the terms within it to understand what it meant.

MAHC Committee Response:

Disagree. This is a complicated definition but this is how systems are defined by state and EPA authorities. Suggested definition does not include all situations in US.

Comment:

Glossary--Construction Joint -- delete; not used in MAHC

MAHC Committee Response:

Disagree. Used in annex.

Comment:

Glossary--Corrosive Materials -- Delete -- not used in MAHC

MAHC Committee Response:

Disagree. Used in annex.

Comment:

Glossary--UV transmissivity -- delete, not used in the MAHC

MAHC Committee Response:

Disagree. Used in annex.

Comment:

Glossary--Secure Perimeter -- DELETE; This term is used only once in the code. Moved the content of the definition to the relevant portion of the code.

MAHC Committee Response:

Disagree. Used in multiple locations.

Comment:

Glossary--Barrier -- Delete -- Dictionary term that should not be defined here unless there is a specific use. Could not find any specific use as it relates to this definition.

MAHC Committee Response:

Disagree. Used throughout with definition.

Comment:

Glossary--Standard -- DELETE; This is a dictionary term and should not be included in the glossary.

MAHC Committee Response:

Disagree. Want to be clear and used throughout MAHC.

Comment:

Glossary--Monitoring -- DELETE; This is a dictionary term and is not necessary to define.

MAHC Committee Response:

Disagree. Want to clearly define for user population.

Comment:

Glossary--Storage -- DELETE; The term is a dictionary term and should not be included in the glossary. Storage is used in many ways throughout the document and to define it in this manner will create confusion. Best to remove the definition or change the term.

MAHC Committee Response:

Disagree. Want to make it clear that storage is defined by the time interval based on previous public comments.

Comment:

Glossary--**"Automatic or Robotic Cleaner"** means a modular vacuum system consisting of a motor-driven in-pool suction device, either self-powered or powered through a low voltage cable which is connected to a deck side power supply.

MAHC Committee Response:

Not sure what is changed.

Comment:

Glossary--Crack -- Delete -- Crack is a dictionary term and should not be defined here. There are code requirements listed in this definition which belong in the code and not in any definition.

MAHC Committee Response:

Partial agreement. Deleted code like language.

Comment:

Glossary--**"Qualified Aquatic Facility Operator "** means an individual that is responsible for the operation and maintenance of the water and air quality systems and the associated infrastructure of the aquatic facility and who has successfully completed an AHJ- recognized operator training course offered by an AHJ-recognized training agency and holds a current certificate for such training. -- Added "aquatic facility" so as to clarify vs a "ride operator" for a waterslide. Also added what they are responsible for to be consistent with the other identified positions.

MAHC Committee Response:

Partially agree and have added some wording. Prefer not to change this definition since the MAHC does not define a ride operator.

(24) Gamini Perera, Schlitterbahn, New Braunfels, TX
7 comments

Comment:

5.4.2.1.2--Contents: The AQUATIC FACILITY preventive maintenance plan shall include details and frequency of owner's or operator's planned routine facility inspection, maintenance or servicing, and recirculation and water <u>treatment component replacement.</u> (Definition: hose's, electrical components, pvc backflow preventers, exc…)

MAHC Committee Response:

Agreed, edited.

Comment:

5.4.2.2.2--Equipment Inventory: A comprehensive inventory of all mechanical equipment associated with each AQUATIC VENUE shall be available at the AQUATIC FACILITY. (Definition)

MAHC Committee Response:

Not sure what is different in suggestion. Left as written.

Comment:

5.5.6.1.1--CRACKS exhibiting any of the following characteristics shall be evaluated by a structural engineer: (This code does not identify whether or not it's wood, steel, fiberglass) (also no structural engineer will sign off on a fiberglass infraction.

MAHC Committee Response:

Agreed. We have changed the wording to reflect public health and safety performance criteria requiring (trips, falls, laceration) and moved old wording to annex.

Comment:

5.6.1.2.1--Assessments: The QUALIFIED OPERATOR shall assess glare conditions throughout operating hours to ensure the AQUATIC VENUE bottom and objects in the POOL are clearly visible. (Who decides what a qualified operator is! Is E&A, American red cross, CPO, exc…)

MAHC Committee Response:

Agreed this is unclear. Have reworded to clarify and removed the word "ensure".

Comment:

5.8.5.2.2.2--First Aid Supplies LG: 11) Blood borne pathogen spill kit (What's composes of a BBP kit)

MAHC Committee Response:

Agreed. This is discussed in the annex.

Comment:

5.8.5.2.3.3--Management Contact Info: A permanent sign shall be conspicuously posted and maintained displaying contact information for emergency personnel and AQUATIC FACILITY management. (Why does it have to be a manager? Can it not be a facilities person that is on call).

MAHC Committee Response:

Disagree. If it is an emergency, management needs to know there is an emergency since they have ultimate liability.

Comment:

5.8.5.3.3--Rescue Tube Immediately Available LG: Each QUALIFIED LIFEGUARD conducting PATRON surveillance with the responsibility of in-water rescue in less than 3 feet (0.9 m) of water shall have a rescue tube immediately available for use. (NB has about 40 positions that have LG in tube shoots that are recognized as assisting… also will this pertain to slide dispatch.

MAHC Committee Response:

No change proposed by commenter. In response to question, it does not apply to slide dispatch.

(25) Gary Lochner, Unison Comfort Technologies, Minneapolis, MN
20 comments

Comment:

4.2.2.3.3--ASHRAE 62.1 is not the correct source to cite for Natatorium Air Pressure. 62.1. 62.1 generally suggest positive pressurization of buildings. It gives exceptions for industrial facilities with contaminated air. The ASHRAE Applications Handbook Chapter on Places of Assembly is the correct source regarding Natatorium Air Pressure. -- REFERENCE: 2011 ASHRAE Applications Handbook on Natatorium Design

MAHC Committee Response:

Accept commenter's comments. Recommended change as follows: Aquatic facility air handling system design, construction, and installation shall comply with the 2011 ASHRAE Applications Handbook on Natatorium Design ASHRAE standard 62.1, Ventilation for Acceptable Indoor Air Quality, and/or applicable local codes with additional requirements as stated in section MAHC 4.6.2.

Comment:

4.2.2.3.4--The MAHC has not addressed recommended materials for Air Ducts. Ducts must be resistant to corrosion from the airborne chemicals. Coated steel, aluminum, and fabric ducts are options to consider. The ASHRAE Applications Handbook has good recommendations. -- REFERENCE: 2011 ASHRAE Applications Handbook on Natatorium Design

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.6.2.5 ANNEX--There are several misconceptions and misstatements in this section. ASHRAE 62.1 prescribes minimum amounts of outside air. It does not discuss air TURNOVER at all.

TURNOVER in the MAHC definitions refers to water, defined as the time required to replace the volume of water in the venue. The concept of air TURNOVER does not appear in ASHRAE 62.1, or in the 2011 ASHRAE Applications Handbook on Natatoriums. The Handbook discusses air changes to determine the total Air Delivery Rate. An air change includes a portion of outside air and a portion of recirculated air. The Air Delivery Rate is required to successfully perform all requirements of air distribution in the natatorium at acceptable supply temperature and introduce the necessary outside air for IAQ

ASHRAE 62 does NOT take into account the number of users for natatoriums (other than spectators). The number of bathers does not enter into the ASHRAE 62 calculations..

"ASHRAE fundamentals" does not have any sections on natatoriums. The ASHRAE Applications Handbook does not include any references to TURNOVER.

There are many important factors in the design of a natatorium. The Air Delivery Rate must be adequate to allow the design of an effective air distribution system, the fresh air must be adequate to provide a healthy space, and the water treatment system must be adequate to provide water. These three factors are equally important. It appears that the MAHC is confusing the term TURNOVER with Air Delivery Rate., and the air distribution (which has many more requirements than just condensation prevention) is completely intertwined with the Air Delivery Rate.
-- REFERENCE: ASHRAE 62.1-2013, 2011 ASHRAE Applications Handbook on Natatorium Design, ASHRAE Handbook on Fundamentals

MAHC Committee Response:

Agreed on use of terms. Wording edited.

Comment:

4.6.2.6.2 # 10--Although it may be desirable to reduce outside air during unoccupied hours for economic reasons, there is no provision that allows this in ASHRAE 62.1 The outside air requirement for natatoriums is based solely on pool and floor square footage, with no "people factor". ASHRAE 62.1 specifically disallows the use of Demand Control Ventilation for spaces with no "people factor". If the MAHC wishes to allow the reduction below the ASHRAE 62.1 required minimum OA during unoccupied operation, either a method of stopping migration of pool chemicals must be provided (such as a pool cover), or the MAHC should specifically state that it is intentionally deviating from ASHRAE 62.1, and it should be noted that indoor air

quality may be compromised.. -- REFERENCE: ASHRAE 62.1-2010 User's Manual, pp 72-76 and Appendix A

MAHC Committee Response:

Disagree. The committee recognized that the design engineer must always balance the cost of introducing outside air to the requirements of the users of the pool. ASHRAE 62 provides provisions for the engineer to utilize these alternate control schemes and the air handlers used today allow flexibility to vary the volume of outside air utilizing the engineers control schemes. We feel this flexibility needs to be left to the design engineer. The statement allows this to occur.

Comment:

4.6.2.6.2 #5--This section is on Air Handling System Design. Item 5 is all about water systems, and should be deleted from this section. Is it possible that a calculation of evaporation rate from pools and water features was the intended facet?

MAHC Committee Response:

Agreed. Number 5 deleted. When this section of the annex was first written, the higher outside air ventilation rates were being considered. When the decision to go back to only the ASHRAE 62 reference, I can understand why some confusion may now exist in the annex.

Comment:

4.6.2.6.4 & 4.6.2.6.4.1--In aquatic facilities, these are normally HVLS (High Volume Low Speed) fans – I haven't heard anyone in the industry using the term "Paddle Fan". The sentence under 4.6.2.6.4.1, "Air Turnover", should just be added to 4.6.2.6.4, and the "Air Turnover" item should be deleted..

MAHC Committee Response:

Agreed and edited. While the committee has and does use the term paddle fan, we recognize that the comment uses a more technical term and would accept the substitute as follows.

4.6.2.6.4 High Volume Low Speed Fans
AIR HANDLING SYSTEM design may not consider mechanical fans used to push air within the space as part of the outdoor air calculations for the INDOOR AQUATIC FACILITY as defined in MAHC Section 4.6.2.7.
4.6.2.6.4.1 Air Delivery Rate
Mechanical fans used to push air within the space may be used in the calculation for air delivery rate (turnover).

Comment:

4.6.2.7.1--The ASHRAE Applications Handbook on Natatorium Design states that the amount of outside air prescribed by ASHRAE 62.1 may be inadequate for high occupancy public pools

and waterparks. This is an understatement, especially for community recreation centers that feature water slides and other water features. It is also arguably true for competition pools. Commercial waterparks are so far outside the conditions seen in competition pools and recreation centers that ASHRAE 62.1 should not even be discussed in their design. These systems should have 100% outside air capability, with at least 50% minimum outside air on winter design days.

I recommend the following - “”The AIR HANDLING SYSTEM shall have a design capability to supply the minimum outside air requirements using ASHRAE 62.1, Ventilation for Acceptable Indoor Air Quality. The designer shall consider increasing the amount of minimum outside air capability for high occupancy public installations as discussed in the ASHRAE Applications Handbook on Natatorium Design.” -- REFERENCE: 2011 ASHRAE Applications Handbook on Natatorium Design.

MAHC Committee Response:

Disagree.

Comment:

4.6.2.7.1 ANNEX--It is unfortunate that the MAHC was castigated for the procedure it proposed for calculating minimum outside air. The MAHC people writing the procedure indicated that their experience showed that more outside air was required to provide good IAQ than has been historically provided using ASHRAE 62. They devised a method that resulted in a higher minimum – one that varied based on the usage/type of the pool.

In my view, the methodology was superior to the ASHRAE 62 procedure, because it attempted to address the problem of noted in the ASHRAE Applications Handbook on Natatorium Design; the insufficiency of the ASHRAE 62 calculation for high occupancy public pools and waterparks.

The amount of science involved in the MAHC proposed calculation is no different than that of the current ASHRAE 62.1 calculation, which was based on the experience of the members of the ASHRAE committee that chose the calculation which first referenced in the 1999 edition of the ASHRAE Applications Handbook. That calculation, 0.50 cfm/sq. ft of pool and deck, has since been changed to 0.48 cfm.sq ft to make it an even multiple of the 0.06 cfm/sq ft used as a minimum “area factor” for generic spaces.

I do not agree with the factors proposed in the MAHC procedure. I believe they are too high for flat water pools, and much too low for commercial waterparks. However, I believe it would have been better to tweak those factors than revert to the inadequate method currently used by ASHRAE 62, which has no provisions for the type of pool, and does not take into account either the height of the space or the Click here to enter text. expected occupancy of the pool. -- REFERENCE: ASHRAE 62.1-2010 User’s Manual, Determining Component Ventilation Rates, pp. 72-75

MAHC Committee Response:

Disagree.

Comment:

4.6.2.7.11 ANNEX--Outdoor air can and should be tempered in the purge mode. The space temperature (and thus dewpoint) should not be allowed to fall below setpoint during purge mode in heating season. Running purge to accomplish one air change has no relationship to the time required to return the space and water quality to safe levels.

MAHC Committee Response:

Disagree. The committee recognizes that some design engineers would temper the air. This is a choice for the engineer and the committee holds to the original requirement as the basis of the code.

Comment:

*4.6.2.7.11.1 & 4.6.2.7.11.2--h*ere are two serious problems with these two items. First, there is absolutely no correlation between completing one air change of outdoor air in the space and the time it takes for DBPs from superchlorination to off- gas and allow the successful restoration of water quality and air quality to safe levels for occupancy through ventilation. A typical design we have seen for community rec centers is 3 air changes of outside air operated for 3 hours (nine air changes). Second, the air SHOULD be heated during a purge mode during heating season. Allowing the space temperature to fall below setpoint during heating season lowers the indoor dewpoint and greatly increases the risk of condensation and corrosion.

Also, the amount of outdoor air used during a purge mode should not be stipulated by the MAHC. For a competition pool where superchlorination can be scheduled during unoccupied time periods, the minimum outside air rate may be fine, and the purge mode operation will last several hours. In the case of a community recreation center where a diaper accident may shut down the pool and cause a loss of revenue, a higher rate of outside air, perhaps up to 100%, may be the correct choice. The rate of outside air supplied during a purge mode should be a design decision made by the engineer and owner. The increase in heating required should be considered vs. the need to get the facility safe for operation. Energy recovery can be used to offset increases in heating load.

The two items in the section – assuming one air change is adequate for purge after superchlorination – and that the air is not heated in a purge mode – are both results of limitations of certain types of air handlers used on natatoriums. If the heating capacity necessary to run purge mode is not provided, then the mode cannot be run for much time without big condensation problems occurring, therefore a short purge is all that is possible. The tail should not wag the dog.

I suggest the following " The purge mode shall be operated until oxidizers are within acceptable levels, and the chloramine odor has dissipated to an acceptable level." The

amount of outside air may be increased during purge mode from the design minimum outside air rate depending on the urgency required in bringing the pool space back to safe levels.

MAHC Committee Response:

Disagree. Significant numbers of public comments were received regarding the proposed increase (Table 417.1 in USPSHTC), above ASHRAE 62.1 STANDARDS of required outdoor air. The commenters noted that the requirements will result in increased costs for equipment and operation while lacking adequate data to support the increase. Based on the potential negative impact and the need for additional research and data to differentiate the causes and sources of indoor air quality problems on design criteria (e.g., design, inappropriate operation, inadequate maintenance), the Steering Committee decided to defer to ASHRAE 62.1 outdoor air requirements in this version of the MAHC. 0.48 cfm/ft2 fresh air is consistent with the minimum value of fresh air found in ASHRAE 62.1. The Steering Committee thought it important to preserve the work done by the Technical Committee, so the proposed code language for additional outdoor air has been moved to the Appendix in the MAHC along with preserving the corresponding annex discussion. A MAHC research agenda should be developed and should be a priority to better address the contributing factors to indoor air quality problems and the appropriate design and operational requirements needed to address those factors.

Comment:

4.6.2.7.12 ANNEX--Monitoring CO2 levels has no place in natatorium design per ASHRAE 62. The amount of outside air is an “area” factor only, and it is predicated on controlling DBPs from the pool. CO2 is used as a proxy for occupancy, but it is unrelated to off-gassing of DBPs. ASHRAE 62 does not allow reduction of outside air based on CO2 for natatoriums, because there is no “people” factor in the calculation. Also, the term “Air Turnover Rates” should be eliminated. -- REFERENCE: ASHRAE 62.1-2013, ASHRAE 62.1 User’s Manual, Appendix A, CO2-based Demand Control Ventilation

MAHC Committee Response:

Agreed. MAHC revised.

Comment:

4.6.2.7.2 ANNEX--This idea presupposes that the pressure control is functioning properly. Further, there is also no guarantee under this idea that the outside/external air entering the space is being distributed by the air distribution system to the breathing zone. Exhaust air should not be used as a proxy for outside air To prove that outside air is being delivered to the space, the only outside air should be counted is that which can be directly measured and delivered by the air distribution system.

MAHC Committee Response:

Agreed. Section edited. There are several methods to add a MONITORING station to the outside air portion of the AIR HANDLING SYSTEM to establish the volume of outside air being introduced into the AQUATIC FACILITY. Such a MONITORING station should be installed. In addition, it should be noted that a negative pressure must be maintained during all operating modes. This negative pressure must be set-up at the commission stage by the installing contractor or by means of automatic operation by the AIR HANDLER or Building Automation System.

Comment:

4.6.2.7.3--ASHRAE 62.1 does not consider the maximum occupancy of Patrons in the calculation of minimum outside air, it only uses the Area component, no People component. It specifically disallows reduction in outside air by demand control ventilation strategies for pool spaces.. If the MAHC is going to use ASHRAE 62.1 as stated, this idea is not a possibility, and should be deleted. -- REFERENCE: ASHRAE 62.1-2013, ASHRAE 62.1-2010 User's Manual, pp72-76 and Appendix A+

MAHC Committee Response:

Disagree. The committee recognized that the design engineer must always balance the cost of introducing outside air to the requirements of the users of the pool. ASHRAE 62 provides provisions for the engineer to utilize these alternate control schemes and the air handlers used today allow flexibility to vary the volume of outside air utilizing the engineers control schemes. We feel this flexibility needs to be left to the design engineer. The statement allows this to occur.

Comment:

4.6.2.7.4--This should be titled "Air Delivery Rate"

MAHC Committee Response:

Agreed. Same comment as 4.6.2.5 ANNEX repeated below: The committee would agree that on the air side of the industry the term "Air delivery rate" or "Air Turns" are normally used and the word "Turnover" is not.

Comment:

4.6.2.7.6 ANNEX--The MAHC is using the ASHRAE Applications Handbook for relative humidity recommendations. The Handbook recommends a range of 40-60% for the health of the enclosure, not 45-60%. It is often desirable to have the space humidity go below 45% to prevent condensation in northern climates in winter. 40-60% should be the recommended range. -- REFERENCE: ASHRAE Applications Handbook on Natatorium Design.

MAHC Committee Response:

Agreed. Edited so the minimum value changed from 45% to 40% in the annex text to be in agreement with the ASHRAE reference.

Comment:

4.6.2.7.7--Add "(adjacent indoor spaces and outdoor ambient)". -- REFERENCE: 2011 ASHRAE Applications Handbook

MAHC Committee Response:

Agreed. Edited.

Comment:

5.6.2.4.1.1--There is no provision in ASHRAE 62.1 to allow the reducing the minimum OA. The amount is calculated without a "people" factor, there is only an "area" factor. Therefore, demand control ventilation concepts are not allowable for natatoriums under ASHRAE 62.1. This is a practical provision, and the requirement the IAQ requirements be met makes it even more reasonable. However, it should be stated that such a reduction does not meet ASHRAE 62.1 requirements. -- REFERENCE: ASHRAE 62.1-2013, ASHRAE 62.1-2010 User's Manual, pp72-76 and Appendix A

MAHC Committee Response:

Disagree. The committee recognized that the design engineer must always balance the cost of introducing outside air to the requirements of the users of the pool. ASHRAE 62 provides provisions for the engineer to utilize these alternate control schemes and the air handlers used today allow flexibility to vary the volume of outside air utilizing the engineers control schemes. We feel this flexibility needs to be left to the design engineer. The statement allows this to occur.

Comment:

5.6.4.1.3--Changing air temperature cannot maintain or change space dewpoint. Since a requirement of the MAHC is to have a professional engineer do the design, specification of a design space temperature should be mandatory. The "in the absence of such…" statement should be removed.

MAHC Committee Response:

Disagree. While the committee agrees that a professional engineer should be involved to define the temperature, we feel the added statement is not incorrect and can provide guidance as to how to select the temperature.

Comment:

Glossary--The definition "Air Handling System" requires more clarity. I suggest changing the second sentence to read "The system contains components that move and condition the air for temperature, humidity, and pressure control, and transport and distribute the air to prevent condensation, corrosion, and stratification, provide acceptable indoor air quality, and deliver outside air to the breathing zone.

MAHC Committee Response:

Agree. Code revised.

Comment:

Glossary--There is absolutely no correlation between completing one air change of outdoor air and the successful restoration of water quality and air quality to safe levels for occupancy. I suggest the following " Purge means to bring in outside air and exhaust natatorium air until oxidizers are within acceptable levels, and the chloramine odor has dissipated to an acceptable level."

MAHC Committee Response:

Partially agree. We have removed the 1 air exchange. The odor level wording has not been added since it is not enforceable at this time.

(26) George Diefenthal, NeoTech Aqua Solutions, San Diego, CA
3 comments

Comment:

4.7.3.3.3.3.1--The labeling described is more than is required by NSF, which seems onerous as the MAHC states that it accepts certification by NSF.

MAHC Committee Response:

No change proposed by commenter. Information required on label is necessary for assessing operational compliance.

Comment:

4.7.3.3.3.6,4.7.3.3.3.6.1, & 4.7.3.3.3.6.2--These three sections are a cause for confusion. The first and second states that the unit must have a sensor that records the data for all lamps. The third that if not all, then enough to detect the output of all lamps. I believe these were written around the different requirements written into the UVDGM and meant to differentiate between low and medium pressure lamps. These needs to be more explicit. -- REFERENCE: US EPA UVDGM

MAHC Committee Response:

Disagree. The sections do not require a specific number of sensors, rather its more performance based by indicating "sufficient sensors" shall be provided.

Comment:

5.7.3.2.1.6--A provision should be made to permit the data to be sent to another device, such as a PLC or other controller. Requiring the data to be stored locally will unnecessarily increase the cost of the system.

MAHC Committee Response:

Agreed. Section deleted.

(27) Harvey Klein; Garden State Laboratories, Inc.; Hillside, NJ
1 comment

Comment:

General ANNEX--Bacteriological analyses should be required for public recreational bathing areas, including swimming pools and whirlpools.

MAHC Committee Response:

Disagree. We are not aware of data that show a marked advantage of microbiologic testing over routine disinfectant and pH testing. The MAHC is willing to re-visit this issue if the peer-reviewed summary data are provided.

(28) Howard Dryden, Dryden Aqua Ltd., Edinburgh, Scotland
5 comments

Comment:

4.7.2.2.3.1--The filter media should be in compliance to a standard such as NSF61. This applies to sand because the quality of sand will vary from different deposits. The particle size distribution will be required to be in compliance to the standard because this will have a direct impact on filter performance.

Performance is inversely proportional to be depth, minimum bed depth for a public installation should be 36 inches.

Filtration performance is exponentially related to filter velocity. The upper velocity should not exceed 30m/hr; however, it is recommend that it is reduced to less than 20m/hr if there is no pre-coagulation and flocculation.

MAHC Committee Response:

Disagree. Currently, the MAHC refers to NSF Standard 50 for the requirements for filters and acceptable filter media including sand. Partially agree regarding sand filter performance, the Annex includes detailed discussion regarding this.

Comment:

4.7.2.2.3.2--Back-wash water flow is a function of water temperature and salinity. The flow should be sufficient to fluidize the bed by 20% for a period of 5 minutes. For and, this flowrate relates to a velocity of more than 55m/hr. Flowrates slower than this rate will result in poor back-wash performance, resulting a cryptosporidium and giardia risk as well as a bacteriological risk and higher combined chlorine.

MAHC Committee Response:

Partially agree. See Annex for detailed discussion of this topic.

Comment:

4.7.2.2.4.1--The minimum bed depth for a public pool should be 36 inches to improve filtration performance for cryptosporidium oocysts

MAHC Committee Response:

Partially agree. Currently, the MAHC refers to NSF Standard 50 for the requirements for filters. The Annex includes detailed discussion regarding filter media depth requirements. Future revisions to the MAHC may be considered upon submittal of data to support a proposed change.

Comment:

4.7.2.2.5.1--The differential pressure across the filters should not be allowed to exceed 0.5 bar to avoid the forcing of solids through the bed.

MAHC Committee Response:

No change needed. Code section specifies gauge capabilities not operating criteria.

Comment:

4.7.2.2.6.1--Press filters will only remove particles down to 20 microns when operating under perfect conditions. In order to remove cryptosporidium oocysts at 5 microns it is essential that flocculation chemicals is injected into the water before the filters.

Flocculants must be added after the pump to avoid damage to the impellors. On injection of a flocculent into the water, it will immediately hydrolise and then the flocculation reactions will commence. Flocculants must be injected after the pumps because the pumps will prevent the flocculation reactions from progressing. If a ZPM static mixer is not available as an injection point, use and elbow or tee junction as a semi turbulent injection point.

MAHC Committee Response:

Agree. Code revised.

(29) Jack Soto, Schlitterbahn, South Padre Island, TX
6 comments

Comment:

5.12.1.1--We currently create our warning/safety signage on a sign that is uniform to our facility. We will use manufacturer's recommendations and combine with our corporate recommendations when it comes to verbiage.

MAHC Committee Response:

No suggested change. Requirement does not get prescriptive.

Comment:

5.2.1.1--The current wording may put undue burden on facility and AHJ. Due to number of public aquatic facilities in the jurisdiction this may cause AHJ to become back-logged with inspections if necessary inspection staff is unavailable or if inspections of said facilities requires too much time. This would force some facilities to remain closed if AHJ cannot inspect in a timely manner.
Suggested wording: The AQUATIC FACILITY may be placed in operation prior to an inspection approved by the AHJ shows compliance with the requirements of this CODE.
This wording would totally eliminate the AHJ pre-approval inspection. This revision is not in the spirit of the MAHC however, maybe the following phrase could be added to the end of my suggested wording "if the last pre-operational inspection was performed by the AHJ and no deficiencies requiring facility closure are noted." This might prove to be in the spirit of the MAHC

MAHC Committee Response:

Agreed. Have added in AHJ approval or inspection.

Comment:

5.2.1.2--The regulation as worded could put financial burden on smaller facilities who do not have the support in operational, aquatic and maintenance activities that larger facilities may have. Due to the extent of the MAHC, ostensibly the AHJ has the potential to find many deficiencies and re-inspections may become a cost burden to facilities who are in fact working to rectify the problems in the spirit of the MAHC. While this is probably not a concern of Schlitterbahn's it might cause such a back-log to the AHJ performing re-inspections that the pre-operational inspections of other facilities become back-logged, thus forcing other facilities to delay opening in order to receive their annual pre-operational inspection (especially in Texas where aquatic facilities are so prevalent).
Suggested wording:
Where more than one annual pre-operational inspection is required for an AQUATIC FACILITY before it can be approved for operation, the AHJ shall not assess a re-inspection fee for each

additional inspection after the initial inspection.
The wording suggested above would not place undue financial burden on facilities. It is understood that more resources of the AHJ will have to be utilized after implementation of the MAHC and in that regard, we could further suggest that the first pre-operational re-inspection be free of charge but that further re-inspections be assessed a fee. This would allow a free pre-operational inspection free of cost. If the AHJ found any deficiencies, the facility would get one re-inspection free of charge to rectify the issues. Any re-inspection beyond that would be unnecessarily cumbersome to the AHJ and then a re-inspection fee should be charged.

MAHC Committee Response:

Agree. All fee references removed from MAHC and moved to administrative guidance.

Comment:

6.2.1.2.5--We currently use the recommended time provided by our AHJ-recognized training agency, Jeff Ellis &Associates.

MAHC Committee Response:

No response necessary.

Comment:

6.2.1.2.7--Our facility doesn't have manikins for CPR simulation, we use current candidates in the training to simulate an unconscious adult and/or child. For infants we use 18" sections of old rescue tubes that we salvage and create an infant out of them. We do this to help recycle our damaged rescue tubes as well as save on cost of actual infant manikin.

MAHC Committee Response:

Disagree. A CPR manikin is accepted as necessary equipment to use in teaching CPR.

Comment:

6.2.1.3--We currently do not check government issued IDs to validate that same person taking the exam is the same person we are giving a license/certificate to.

MAHC Committee Response:

No response necessary.

(30) James Dunn, Aquatic Development Group, Cohoes, NY
17 comments

Comment:

2.2.7--Suggest small caps words are hyper-links back to the definitions. Suggest similar for acronyms

MAHC Committee Response:

Agree. However, this will be done at a later date so that the launch of the MAHC is not delayed.

Comment:

4.1.2.2.4--Reads as if a plan, elevation and isometric is required for each of the listed components. Possible re-word " Detailed scaled and dimensional drawings for each individual AQUATIC VENUE shall contain a flow diagram in using either plan and elevations or isometric showing the location of:"

MAHC Committee Response:

Agree. Wording revised.

Comment:

4.5.3--Just keyword, no sections or paragraphs associated . is this a mistake?

MAHC Committee Response:

Agree. Heading deleted. Section 4.5 renumbered.

Comment:

4.5.5.9--Does this eliminate the "roll out gutter" as it needs to be a minimum 6" from deck to water level.

MAHC Committee Response:

No change stated. This was not the intent.

Comment:

4.5.6.3--Conflicts with ADA of 34"

MAHC Committee Response:

Disagree. Yes, it appears to be inconsistent with ADA. But most handrails at pools are not used for ADA accessibility. If railings are provided for ADA, they will need to meet those standards. The current language just stipulates that 28" is a minimum. Nothing would preclude a designer from 34" railings.

Comment:

4.5.7.5--Conflicts with ADA of 34”

MAHC Committee Response:

Disagree. Yes, it appears to be inconsistent with ADA. But most grab rails at pools are not used for ADA accessibility. If railings are provided for ADA, they will need to meet those standards. The current language just stipulates that 28" is a minimum. Nothing would preclude a designer from 34" railings.

Comment:

4.7.--Multiple means of chemical monitoring for combined systems…..

MAHC Committee Response:

No change proposed by commenter, comment unclear.

Comment:

4.7.1.10.2.1--Unfiltered water needs definition or clarification.

MAHC Committee Response:

Agree. Code and Annex revised.

Comment:

4.7.1.6.2.3--Submerged suction outlets located no less than 3ft apart measuring to center lines of outlet cover? Doesn’t this conflict with VGB?

MAHC Committee Response:

No change proposed by commenter. In response to the question, the spacing requirement is not in conflict with the VGB.

Comment:

4.7.1.6.4.1--There are two 4.7.1.6.4.1 paragraphs.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.6.4.1--Design capacity- 100% flow through the main drain system. Each branch pipe from main drain outlet shall be designed for 100% flow. This should be clarified for a two outlet system. Otherwise piping is grossly oversized for three or more drains. See next comment.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.6.4.1--Three or more drains. Branch line piping should be clarified as being sized for $Q_{MAX.}$ for each outlet.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.9.1.1--NSF certified flow meters…. Are there any available?

MAHC Committee Response:

No change proposed by commenter.

Comment:

4.7.2.1.3.1.1--Filter bed depth less than 15" operate at 12 GPM/FT^2. Pursuant to NSF certifications?

MAHC Committee Response:

Disagree. Sand filters do not work at 15 or 20 gpm/sf in terms of efficient pathogen removal and protecting public health; reducing filtration rates is the first step toward addressing this problem.

Comment:

Acronyms--ADAAG does not appear in the acronyms list

MAHC Committee Response:

Agreed, added but defined as ADASAD.

Comment:

Glossary--Is "hygiene fixtures" supposed to be defined under "hygiene facility" or should it have its own line.

MAHC Committee Response:

Agreed. Lost page break.

Comment:

Glossary--"substantial alternation" is subjective and needs defining.

MAHC Committee Response:

Disagree. The 50% makes this quantitative so should be able to calculate.

(31) Jason Bahrke, Life Floor, Minneapolis, MN;
(32) Anne-Marie Spencer, PlayCore, Chattanooga, TN
13 comments

Comment:

4.10.3 --Change to the Section: Remove the word "hard".
4.10.3.1 Floors
The floors of Hygiene Facilities and dressing areas serving Aquatic Facilities shall have a smooth, easy-to-clean, impervious-to-water, slip-resistant surface.
-- What would a Hard surface do better than a Manufactured Surface if the Manufactured Surface is compliant with the rest of the code?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.3 --Add Section:
4.10.3.6 Manufactured Surfacing
Manufactured surfacing may be installed provided it is in conformance with all applicable provisions of this chapter.
-- What would a Hard surface do better than a Manufactured Surface if the Manufactured Surface is compliant with the rest of the code?

MAHC Committee Response:

Disagree. Section 4.10.3.1 has been revised to remove "hard", so it is unnecessary to specify "manufactured surface" if a product complies with the code criteria.

Comment:

4.12.8 --Add to Paragraph:
4.12.8.2.1 Manufactured Surfacing
Manufactured surfacing may be installed provided it is in conformance with all applicable provisions of this chapter. Manufactured surfacing shall be uniform, substantially impervious and non toxic. The finish material must be maintained to prevent or repair loose, lifting, peeling

or crumbling material.
-- This is to better describe what appropriate Manufactured Surfacing should be for this application. This suggested wording is consistent with perimeter decks.

MAHC Committee Response:

Disagree. No change necessary. Code already allows manufactured surfaces and provides materials and performance criteria.

Comment:

4.12.9 --Add Section:
4.12.9.3 Manufactured Surfacing
Manufactured surfacing may be installed provided it is in conformance with all applicable provisions of this chapter. Manufactured surfacing shall be uniform, substantially impervious, non toxic, and easily cleaned. Manufactured surfacing shall be deemed suitable by the manufacturer for aquatic and chlorinated environments.
-- This is to better describe what appropriate Manufactured Surfacing should be for this application. This suggested wording is consistent with perimeter decks.

MAHC Committee Response:

Disagree. No change necessary. Code already allows manufactured surfaces and provides materials and performance criteria.

Comment:

4.2.1.5 ANNEX--I suggest using a slip resistance standard that is more consistent with real world activity in an aquatic venue. The standard should simulate outdoor or running foot traffic and use a slider that simulates barefoot traffic.

MAHC Committee Response:

Commenter did not provide a different recommended standard for consideration.

Comment:

4.5.10 --Add Section:
4.5.10.4 Manufactured Surfacing
Manufactured surfacing may be installed provided it is in conformance with all applicable provisions of this chapter. Manufactured surfacing shall be uniform, substantially impervious, non toxic, and easily cleaned. Manufactured surfacing shall be deemed suitable by the manufacturer for aquatic and chlorinated environments. The finish material must be maintained to prevent or repair loose, lifting, peeling or crumbling material.
-- 4.8.1.4.1 General says
“PERIMETER DECK and POOL DECK shall be constructed with a uniform, and easily cleaned, surface such as concrete.” Inspectors may interpret this to mean no manufactured

surfaces are allowed. This is to clarify that Manufactured Surfacing is allowed provided it is compliant with the code.

MAHC Committee Response:

Disagree. No change necessary. Code already allows manufactured surfaces and provides materials and performance criteria.

Comment:

4.5.20.2.3 --Change to read:
Depth markers shall have letters and numbers with a minimum height of 4 inches (100 mm) of a color contrasting with background. If tiles are used with both a number and unit abbreviation, letters of 1 3/8 inches (35 mm) minimum located in the upper right portion of the tile are acceptable. -- Currently only 9 states require 4" or larger letters for the abbreviations. 1 3/8" seems to be the industry standard.

MAHC Committee Response:

Disagree. For potential safety issues regarding submersion and head first entry into the water, clearly visible depth markings with maximum viewing distances is important.

Comment:

4.5.20.2.4.1 --Abbreviation of "M" may be used in lieu of "Meters."

MAHC Committee Response:

Disagree. To avoid the possibility of confusion, abbreviations for metric units are not included.

Comment:

4.5.20.4.4 --Change to read:
All lettering and symbols shall be at least 4 inches (100 mm) in height. "No Diving" of ¾ inches (19 mm) minimum letter size may accompany a 4 inch No Diving Symbol.

MAHC Committee Response:

Disagree. For potential safety issues regarding diving, clearly visible markings with maximum viewing distances is important.

Comment:

4.8.1 --Add Paragraph:
4.8.1.1.7 Manufactured Surfacing
Manufactured surfacing may be installed provided it is in conformance with all applicable provisions of this chapter.
-- 4.8.1.4.1 General says

"PERIMETER DECK and POOL DECK shall be constructed with a uniform, and easily cleaned, surface such as concrete." Inspectors may interpret this to mean no manufactured surfaces are allowed. This is to clarify that Manufactured Surfacing is allowed provided it is compliant with the code.

MAHC Committee Response:

Partially agree. Code already allows manufactured surfaces and provides materials and performance criteria. However section 4.8.1.4.1 revised.

Comment:

4.8.1.6 --Add Paragraph:
4.8.1.6.1.3 Manufactured Surfacing
Manufactured surfacing may be installed provided it is in conformance with all applicable provisions of this chapter.
-- 4.8.1.4.1 General says
"PERIMETER DECK and POOL DECK shall be constructed with a uniform, and easily cleaned, surface such as concrete." Inspectors may interpret this to mean no manufactured surfaces are allowed. This is to clarify that Manufactured Surfacing is allowed provided it is compliant with the code.

MAHC Committee Response:

Partially agree. Code already allows manufactured surfaces and provides materials and performance criteria. However section 4.8.1.4.1 revised.

Comment:

4.8.1.7 --Add Paragraph:
4.8.1.7.9 Manufactured Surfacing
Manufactured surfacing may be installed provided it is in conformance with all applicable provisions of this chapter.
-- 4.8.1.4.1 General says
"PERIMETER DECK and POOL DECK shall be constructed with a uniform, and easily cleaned, surface such as concrete." Inspectors may interpret this to mean no manufactured surfaces are allowed. This is to clarify that Manufactured Surfacing is allowed provided it is compliant with the code.

MAHC Committee Response:

Partially agree. Code already allows manufactured surfaces and provides materials and performance criteria. However section 4.8.1.4.1 revised.

Comment:

Glossary--Add Definition:
"Manufactured Surfacing" Means a finish material or covering installed over concrete or other

structurally rigid material. -- The term “Manufactured Surfacing” is already used in the MAHC. This is to define what is meant.

MAHC Committee Response:

Disagree. Self-explanatory.

(33) Jennifer Hatfield, APSP Rec Water Quality Committee, Boyton Beach, FL
34 comments

Comment:

4.7.3.3.1.2--Insert: “Alternative means of achieving the goal of secondary disinfection should be acceptable for certain facilities, subject to approval by the AHJ, where the alternative means shall be capable of reducing the cryptosporidium oocyst concentration to less than <1 oocyst/100 ml within 9 hours.” -- There are other means of achieving daily reductions in cryptosporidium besides UV and ozone. Whether or not these means will be practical and protect public health sufficiently is very facility specific and should be left up to the AHJ to make decisions for local facilities, either on a permanent or temporary basis. For example for a swim facility that has a small wading pool of less than 500 gallons. It may be more economical to drain the pool every night than to install a secondary treatment system. Likewise for a facility with ozone or UV, if the secondary disinfection system is not operational, the AHJ could specify a certain amount of time (e.g. 1 week) where the facility could perform daily hyperchlorination to keep the facility open until repairs can be made. Both draining the pool and hyperchlorination are capable of reaching the goals of secondary disinfection (i.e. reducing the number of infective oocysts to <1 oocyst/100 ml within 9 hours). It can be made clear in the annex that these alternatives, while effective, are not promoted by the MAHC as standard operations to replace secondary disinfection because there are issues with both of them. As stated in the first 60 day public comment response, routine hyperchlorination may increase the risk of accidents and injuries since it can require large volumes of chemicals and likely requires someone to work through the night to keep measuring chlorine levels. In drought prone areas, draining of even small bodies of water may not be practical, and facility staff will need to balance and treat the pool water each morning before patrons enter the water. The AHJ should be allowed the flexibility to judge whether the particular facility staff are capable of performing these actions while protecting their own health as well as the health of the patrons.

MAHC Committee Response:

Disagree. Promoting/accepting routine hyperchlorination as standard operation to replace secondary disinfection would likely increase the risk of accidents and injuries since it can require large volumes of chemicals and likely requires someone to work through the night to keep measuring chlorine levels. In addition, one cannot guarantee that such actions will be taken every night. Therefore, no change to the current code language at this time.

Comment:

4.7.3.3.2.3--The secondary disinfection system shall be installed according to the manufacturer's directions.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.2.4-4.7.3.3.2.5--Delete this section or as an alternative move to the annex to avoid confusion in the code and provide as follows:

Any secondary system must be sized and perform so that the concentration of crypto can be reduced from 100,000,000 oocysts to concentrations less than 1 oocyst/100 mi during a normal nightly closure period.

The engineering design of the facility, or any modifications to the facility will need to include specifications for the secondary system, as well as what flows are required to ensure that there is adequate reduction of the pathogen concentration in the pool with treated water to achieve the 1 oocyst/100 ml goal.

…Q = V x (14.8 – ln(V))/(60 x T)…

-- Members of the APSP Recreational Water Quality Committee have been unable to use this equation in a meaningful manner. The equation should be withdrawn until consensus can be obtained that the equation is both useful and practical in enhancing public safety. If these sections are to remain, as an alternative we are suggesting revisions to the language and suggest moving to the Annex.

MAHC Committee Response:

Disagree. The derivation of the formula is based on a mass balance of oocysts in a pool that relates time, flow rate, and concentration of oocysts. There are 4 variables included: time; flow rate; pool volume; efficiency of UV reactor (i.e. 3-log reduction per pass). Annex discussion under keyword "Equation" Section 4.7.3.3.2.5 does a good job explaining what the formula is intended to accomplish. See explanation and example in the Annex text.

Comment:

4.7.3.3.2.7.1 --The minimum required flow rate through the secondary disinfection unit shall be defined in MAHC Section 4.7.3.3.2.5 and 4.7.3.3.2.6 or, where applicable, sections 4.7.1.10.2 and 4.7.1.10.5. In no event shall the *filtration* turnover time exceed that specified in section 4.7.1.10. -- *(To prevent abuse of the formula or the misconception that little to no circulation is required on large pools, if this subsection is to be retained in the CODE.)*

MAHC Committee Response:

Partially agree. Code revised to clarify flow rate through the secondary disinfection system. Filtration turnover flow rate is not relevant to the required secondary disinfection system flow rate.

Comment:

4.7.3.3.3.3.1--UV equipment shall be labeled with the following design specifications: maximum flow rate, minimum transmissivity, minimum intensity, minimum dosage, and maximum flow (gpm) ~~gallons~~ of water disinfected by the unit.

MAHC Committee Response:

Code revised.

Comment:

4.7.3.3.4.7.2--General Comment: Suggest adding to this section a location where the monitor/controller should be located. Should it be next to the generator or out by the pool?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.5.1--General Comment: Currently there are no certifying organizations or certifications for Water Quality Testing Devices. -- If this section remains there is no current way to meet the requirement.

MAHC Committee Response:

Disagree. NSF/ANSI 50 includes criteria for Water Quality Testing Devices.

Comment:

4.9.2.1.5 and 4.9.2.5.2.3--General Comment: If the MSDS is used to determine how many chemical storage spaces are needed, it is easy to imagine that at least three separate spaces may be needed (acid, Trichlor, cal hypo), and that at least three separate exhaust systems shall be required. It is not clear what qualifies as a separate storage space, but partitions within a single room should be sufficient for most facilities. If these storage spaces are in the same room, it does not make sense to require separate exhaust systems for each of them.

MAHC Committee Response:

Agreed. Delete 4.9.2.1.5.

Comment:

5.7.2.3.3.3.3.1--Soak the cartridge overnight in one of the following solutions:

1) A cartridge filter cleaner/degreaser per instructions on product label, or
2) A solution of water with 1 Cup of tri-sodium phosphate (TSP) per 5 gallons of water, ~~or~~
~~3) 1 Cup of automatic dishwashing detergent per 5 gallons of water.~~
-- Electric dishwashing detergents come in a wide variety of formulations (some are chlorine based, some not, for instance), so results could be widely variable. A dishwasher detergent manufacturer would likely test a new formulation to verify efficacy in cleaning dishes, but not in cleaning pool filters.

Furthermore, a basic tenet of safe chemical handling is to always follow label directions. Since it is unlikely that the dishwashing detergent label will include directions for soaking pool filter cartridges, this statement should be removed.

MAHC Committee Response:

Disagree. This is a common protocol used for cleaning cartridge filters.

Comment:

5.7.3 ANNEX--Insert the following: "Although chlorine and bromine are the only primary disinfectants allowed at this time, future research may produce other acceptable primary disinfectants. The criteria for approval as a primary disinfectant are xxxxx" -- Chlorine and bromine are the only approved disinfectants/sanitizers, but there is no reasoning given for why other EPA registered sanitizers and disinfectants are not approved. It is important to spell out exactly the performance based criteria for inclusion in the list of approved disinfectants. Without objective science-based criteria for one of the most important aspects of disease prevention in pools, the inclusion or exclusion of certain EPA registered sanitizers and disinfectants will appear to be arbitrary and subjective.

MAHC Committee Response:

Added some of the wording to the Annex. Most of these EPA registered products are not registered for use in a public setting or for use as a primary barrier to pathogen transmission. No need to outline that.

Comment:

5.7.3.1.1--Chlorine ~~(Ca/Na/Li Hypochlorite~~) -- Instead of listing all the chlorine sanitizers, it would be better to leave the list off, or use more general categories (e.g. hypochlorites, chlorinated isocyanurates, chlorine gas, or solid, liquid and gaseous forms of chlorine)

MAHC Committee Response:

Agreed. Just used hypochlorites.

Comment:

5.7.3.1.1.3--Water Feature Waterslide lines susceptible to holding stagnant water shall maintain disinfectant throughout the lines as per MAHC Section 5.7.3.1.1.2.

Also change the associated section heading from “Waterslide” to “Water Feature”
-- It is not explained why only waterslide lines are included in this requirement. Other water features that are susceptible to holding stagnant water should also be part of this requirement. This would be particularly important for spray features where respirable water droplets may be generated.

MAHC Committee Response:

Agreed. Changed wording to recirculated line and expanded to all aquatic features.

Comment:

5.7.3.1.3.1.2--5.7.3.1.3.1.2 Outdoor All Aquatic Venues
Where The cyanuric acid level is allowed at AQUATIC VENUES it shall remain at or below 100 PPM (MG/L) -- (To prevent the misconception that CYA concentration is to be limited only in outdoor pools, but is totally unlimited in indoor pools, spas, etc.)

MAHC Committee Response:

Agreed. Added "all" and deleted "outdoor" as it was mistakenly left in from earlier version.

Comment:

5.7.3.5--All chemical feed system~~s~~ components must be dedicated to a single chemical and clearly labeled to prevent the introduction of incompatible chemicals. They shall… -- There are a growing number of units that incorporate the feeding of more than one chemical (e.g. chlorine + mineral cartridge)

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.4.3.3.3--Calcium hardness shall not exceed 1000 PPM (mg/L)~~ and maintained per MAHC Section 5.7.4.4~~. -- There are no actual requirements in 5.7.4.4. No range of acceptable saturation index values is given.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.7.4.3.3.3--Calcium hardness shall not exceed 1000 PPM (mg/L) or 800 ppm (mg/L) in Spas.

MAHC Committee Response:

Disagree. No data provided to support the proposed change.

Comment:

5.7.4.4--~~5.7.4.4 Saturation Index for Aquatic Venues~~
~~5.7.4.4.1 Water Balance Determination~~
~~Water balance can be determined by using the Langelier SATURATION INDEX, Ryznar Stability Index, or other indices that are based on calculated values of:~~
~~1) total alkalinity, 2) pH, 3) calcium hardness, 4) total dissolved solids, and 5) water temperature.~~
~~5.7.4.4.2 Langelier Saturation Index~~
~~Maintaining individual values in the range allowed in this CODE will indicate balanced water using the Langelier SATURATION INDEX or other indices.~~ -- (since no enforceable code language is used, this teaching should be moved to the ANNEX)

MAHC Committee Response:

Agreed, this is not enforceable. Have edited to make it so and adding water balance testing frequency. Discussion in annex.

Comment:

5.7.5.3--FAC (or TB) and pH shall be tested prior to opening and every two ~~four~~ hours at all AQUATIC VENUES using an automated disinfectant feed system

MAHC Committee Response:

Disagree. The MAHC wants to give some benefit for having an automated system.

Comment:

5.7.5.6--Calcium hardness shall be tested every two weeks ~~monthly~~ at all AQUATIC VENUES.

MAHC Committee Response:

Disagree. Prefer to stick with current wording.

Comment:

5.9.1.3--MSDS (also SDS)
For each chemical, STORAGE, handling and use of the chemical shall be in compliance with the manufacturer's Material Data Safety Safety Data Sheets (MSDS also called just Safety Data Sheets, SDS) and labels. -- correction of word reversal and cross reference to coming

Globally Harmonized terminology. OSHA fact sheet:
https://www.osha.gov/dsg/hazcom/HCSFactsheet.html

MAHC Committee Response:

Agreed. Edited.

Comment:

6.3.4.5.6.1--The accidental chemical release plan shall include procedures for response and cleanup, how to determine when professional HAZMAT response is needed and how to obtain it, provision for training staff in these procedures, and a list of equipment and supplies for clean-up. -- REFERENCE: Appendix C to CFR 1920.119, section 13 "Emergency Preparedness",
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9763

MAHC Committee Response:

Agreed; added.

Comment:

6.5.3.2 #2 --2) Circulate the water through a SECONDARY DISINFECTION SYSTEM to reduce the number of Cryptosporidium OOCYSTS in the AQUATIC VENUE by 3-logs (99.9%, at least 6.9 turnovers through secondary disinfection system) or, below 1 OOCYST/100ml as outlined in MAHC Section 4.7.3.3.2.4.

[Present a consistent disinfection target: either require
a) 3-log reduction for all disinfection methods, or
b) use the assumed 108 oocyst assault and 10 oocyst/liter target for any disinfection method, including those in 6.5.3.2 1) and 6.5.3.2.1 1). In this latter case the required CT in section 6.5.3.2 1), for instance, would be CT = (6.422 – log10(V)) × 5,100.
With option b) the CT would be fixed at 15,300 only for a 2,642-gallon (or 10,000-liter) venue, the only case in which 3-log reduction is required for secondary disinfection under the posted CODE. Any larger venue requires <3-log reduction to reach the specified 1 oocyst/100 mL target, due to the dilution credit implicit in the assumptions and posted CODE target for secondary disinfection.]

MAHC Committee Response:

Disagree. These are two different types of disinfection alternatives. Secondary disinfection is circulation-dependent and requires multiple passes to achieve the goal so the requirements are that the system have 3 log inactivation in a single pass and then we calculate time/passes to ensure we bring the concentration down below a certain level. With hyperchlorination, the level is uniform throughout the pool (theoretically), so we just have gone with the 3 log inactivation CT value being used. When one calculated the theoretical reduction with time, it

also reduces the Crypto levels below the 1 oocyst/100 ml as required for the secondary disinfection. Wording outlining this has been added to the annex. Altering this in the future could be considered through the CMAHC process.

Comment:

6.5.3.2.1--Add a provision:
4) Check the FREE CHLORINE RESIDUAL and then raise the FREE CHLORINE RESIDUAL to a concentration 20.0 mg/L higher than 1.1 times the CYA concentration (also in mg/L) and maintain for at least 12.75 hours (or an equivalent time and concentration to reach the CT VALUE) before reopening the AQUATIC VENUE.

[This would provide more flexibility, at least for pools with low CYA levels, while still providing a comfortable margin of safety. Taking into account the molecular weights of 129 for CYA and 70.9 for chlorine, a weight ratio of 1.1 FC/CYA is enough to place two chlorines on each CYA molecule. Since getting a 3rd chlorine on the CYA takes extreme conditions not likely to occur to a significant degree even under extreme hyperchlorination conditions in a pool, adding ~1 mg FC for each mg of CYA would be enough to effectively saturate the CYA. Nearly all of any additional chlorine would remain unbound with respect to the CYA and be able to act as non-stabilized chlorine. Thus for example if the water contains 10 mg CYA/L, a FC concentration of 30 would be enough to fully saturate the CYA and still leave 20 mg FC/L to behave as CYA-free chlorine for hyperchlorination. The time for 3-log Cryptosporidium inactivation should be 12.75 hours even ignoring any possible contribution from the heavily chlorinated CYA. -- (To provide additional treatment options until more data is available)

MAHC Committee Response:

Disagree. It is not clear that pure stoichiometry is the only issue to be considered. This is an issue that should be considered along with other stabilized chlorine issues through the CMAHC process as mentioned in other responses.

Comment:

Glossary--Bather Load – The definition ends with an incomplete sentence.

MAHC Committee Response:

Agreed. A portion of the definition was left out.

Comment:

Glossary--The definition for Circulation Path should follow the definition for Chlorine and not the definition for Catch Pool

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--MSDS Material Safety Data Sheets, also known as SDS, Safety Data Sheets
…
SDS Secondary Disinfection System or Safety Data Sheets
-- REFERENCE: OSHA® Fact Sheet/Hazard Communication Standard Final Rule, https://www.osha.gov/dsg/hazcom/HCSFactsheet.html

MAHC Committee Response:

Disagree. Included in acronyms/Initialisms section.

Comment:

Glossary--Aquatic Venue means an artificially constructed or modified natural structure where the general public is exposed to water intended for recreational or therapeutic purposes.

MAHC Committee Response:

Disagree. The number of comments received on this makes it necessary to add more detail.

Comment:

4.12.1.5.4 & 4.12.1.5.5--General Comment: What is considered an effective barrier? What is the intent of this requirement? This is another subjective requirement in the MAHC that will be problematic for the AHJ and users of the code. It also is another example of inconsistency with the ISPSC - the ISPSC language is clearer to the end user. Suggest using the ISPSC language. -- ISPSC 607.1 Barriers. Multiple aquatic vessels within a single complex shall be permitted without barriers where a barrier separates the single complex from the surrounding property in accordance with Section 305.

MAHC Committee Response:

Disagree. Annex provides additional information regarding barrier and intent.

Comment:

4.5.10.2--General Comment: Zero depth sloped entries are better identified and defined in Chapter 6 (Aquatic Recreation Facilities) of the ISPSC. And D-3 pools have specific requirements not found here. The further break down of the different Public swimming pools is clearly an advantage in addressing the differences of public swimming pools. -- The revisions did remove the "to a water depth of 3 feet" so that is not an issue, but referencing the 1:12 goes back to what is addressed above in the public comment for Section 4.5.2.2 - this aspect has to do with the larger issue of how the ISPSC puts public pools into Classes and the MAHC does not.

MAHC Committee Response:

Disagree. This comment was submitted and addressed in the response to public comment for the initial comment period. No change to response.

Comment:

4.5.15.1--4.5.15.1 Hand Holds Provided

Where not otherwise exempted, every POOL shall be provided with hand holds (PERIMETER GUTTER SYSTEM, coping, horizontal bars, recessed handholds, cantilevered DECKing) around the perimeter of the POOL where the water depth at the wall exceeds 24 42 inches (0.6 m). These handholds shall be installed not greater than 12 inches (305 mm) above, or 3 inches (75 mm) below static water level. -- Code This new conflict between the codes should be resolved in favor of the long standing 42 inches depth that has been in effect for decades. The concept of a handhold is to give a bather something to hold on to when the water depth may be over their head. The previously submitted commented on this section accepted the "not greater than 12 inches", but the revisions now have put in that handholds are required "where the water depth at the wall exceeds 24 inches" and the ISPSC uses 42 inches…see Section 323.1 and 323.1.1 of the ISPSC.

MAHC Committee Response:

Disagree. As addressed in the response to public comment for the initial comment period, a water depth of 24 inches is specified which is the threshold between wading pool water depths and other pools.

Comment:

4.5.2.2--This section of the MAHC fails to recognize the difference classes of pools and the need of varied requirements. <u>Slopes of 1 unit vertical in 10 units horizontal</u> must be permitted for Class C pools (a pool operated solely for an in conjunction with lodgings such as hotels, motels, apartments, and condominiums). This slope adequately serves to protect children and swimmers, while allowing a pool to be constructed within the space available for many such properties. Many if not most pools in this category presently have slopes of 1:10 as opposed to 1:12, and there is no data or evidence that requiring a steeper slope would enhance safety. Requiring a 1:12 slope in this category would also make it impossible for many properties to install a pool with a deep and a shallow end. A 1 unit vertical in 12 units horizontal slope for Class B pools (a pool intended for public recreational use) is appropriate. -- 4.5.2.2 In water depths under 5 feet (1.52 m), the slope of the floor of all pools shall not exceed 1 foot (30.5 cm) vertical drop for every 12 feet (3.66 m) horizontal. Replace with Section 401.5 of the ISPSC. – REFERENCE: ISPSC, Section 401.5; See ISPSC: The issue is that the ISPSC breaks our public pools into classes, the MAHC does not. In the ISPSC we use 1:10 for hotel pools due to size limitations (so Class C semi public pools), but we use 1:12 for Class B public pools. See ISPSC 401.5 Therefore, the MAHC and ISPSC are going to be partly consistent and partly non-consistent here re the 1:12 and 1:10 slope, depending on what type of pool is in question. If not addressed could lead to future confusion.

MAHC Committee Response:

Disagree. No data/details provided to support the statement "This slope adequately serves to protect children and swimmers,…" used as rationale for the proposed change. ***Also include rationale regarding non-guarded aspect of these pools.

Comment:

4.6.1.5.1--Replace 6 lumens with 8 lumens as found in the ISPSC. -- Code

The ISPSC carried a minimum requirement of 8 lumens/sf in the previous editions. This was maintained for continuity as it correlates with current practice and is closer to the lowest IESNA recommended minimum value. The MAHC requirement of 6 lumens/sf is less conservative and therefore errs on the side away from safety. See the following analysis, based on IESNA RP6-01.

Both MAHC and ISPSC figures are less than the IESNA RP6-01 recommendations on pp. 34-35, but the 8 lumens/sf number is closer to the lowest IESNA recommendation and therefore is closer to consistency with IESNA than is the MAHC recommendation. There is no correlation between the 6 lumens/sf number in MAHC and RP6-01. Applying the empirical formula on p. 34

F(lumens) = 100xAxpxL/(0.8xr) = (393xAxL)/r

where A is in sf, r is reflectance of surfaces in percent and L is the luminance of the pool surface in candelas/sf

This reduces to the following when adjusting for area:

E (lumens/sf) = F/A (lumens/sf) = 393xL/r

Solving for L (candelas) = (Exr)/393

For E = 6 lumens/sf, L = 1.5 candelas/sf or less, depending on the reflectance of the pool surfaces

The lowest recommended IESNA value (Class IV pool, outdoors) is 5 candelas, so the MAHC value does not correlate with the IESNA requirements.

The ISPSC value of 8 lumens/sf, carried over from previous editions, produces a maximum value of 2 candelas/sf under the empirical formula (100% reflectance of pool surfaces), which is closer to the lowest IESNA minimum recommendation.

It should be noted that the IESNA recommendations vary by pool type and use, and in that regard the code-making bodies should consider whether or not they want to follow that protocol, at which time the minimum values can be adjusted accordingly.

Note also that the above IESNA analysis assumes that the only light source is underwater

lighting. Any additional ambient light, appropriately sized and located, will serve to increase the underwater luminance. -- REFERENCE: Both the 2012 and 2015 ISPSC requires 8 lumens. Note that the 6 lumens found in the MAHC is NOT based on any IESNA recommendation, per the analysis found under basis of change.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.6.2.3.3 --Chain-link fencing constructed of a maximum opening of 1 ¾ inches (44 mm) mesh shall be permitted. -- Final document appears to coincide with ISPSC now, except it should also say "maximum opening", so allowing for smaller openings and not just 1 3/4 inch.

MAHC Committee Response:

Agree

Comment:

Glossary--General Comment regarding the “Spa” definition: The definition needs to clearly differentiate between the different types of spas, i.e. inground permanently installed spas, portable spas, exercise spas and swim spas -- recommend the ISPSC definitions be used. Further “Pool” is referenced throughout the code. Pool by definition incorporates spas, which is not correct. -- REFERENCE: See ISPSC Definitions of different types of spas. Recognize that the revisions did clarify that spa in this definition is a permanent spa, but doesn't define portable spas in the MAHC, still needs more work for consistency with ISPSC and conformity with the different types of spas.

MAHC Committee Response:

Partially agree. The word "permanent" has been deleted from the definition and wording has been added to the annex stating that portable spas are covered and must meet all requirements. The MAHC prefers not to have classes of pools but have clarified in the pool definition that this does not include spas.

(34) Jim Dingman, UL, Northbrook, IL
65 comments

Comment:

1.1.5--The MAHC refers to existing ~~building~~ codes in the jurisdiction for the specific needs. In the absence of existing local codes, the authority having jurisdiction should specify an appropriate code reference. -- there are codes other than the building codes that are applicable here, and are referenced in the MAHC. Proposed wording is more accurate.

MAHC Committee Response:

Agreed. Edited.

Comment:

1.7.2--Where the International Swimming Pool and Spa Code (ISPSC) or the Uniform Swimming Pool, Spa, and Hot Tub Code (USPSHTC) are adopted, these codes shall regulate the design, construction, installation, repair, and alteration of public pools and spas, aquatic features and associated facilities. The MAHC shall supplement these codes. Where differences occur between provisions of this code and the ISPSC or USPSHTC the most restrictive shall govern. Where there is a conflict between a general requirement and specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. -- the ISPSC and the USPSHTC cover the design and construction requirements of pools/spas in detail. Compliance with these requirements is insured by plan review and inspections by building, electrical, plumbing, and mechanical inspectors. The requirements in the MAHC should focus on the sanitation and operation/maintenance of pools/spas, unless neither of these other two codes has been adopted.

MAHC Committee Response:

Disagree. The MAHC has worked diligently with ICC and IAPMO building code groups to eliminate conflicts between the codes. The MAHC has changed some areas and building code will be altered in their next revisions to fix others. It does not work from a user standpoint to have to check across codes to see what is most stringent. If the MAHC is in place, then that wording applies and vice versa for building code. The MAHC has included building-related issues where it is felt they are critical to protect public health. From a public health standpoint, these codes must overlap so those who run the pool programs have a say in what is constructed since they have to inspect and oversee these facilities through the life of the facility.

Comment:

*4.1.1.2--*Where the International Swimming Pool and Spa Code (ISPSC) or the Uniform Swimming Pool, Spa, and Hot Tub Code (USPSHTC) are adopted, these codes shall regulate the design, construction, installation, repair, and alteration of public pools and spas, aquatic features and associated facilities. The MAHC shall supplement these codes. Where differences occur between provisions of this code and the ISPSC or USPSHTC the most restrictive shall govern. Where there is a conflict between a general requirement and specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

Renumber current section numbers 4.1.1.1 through 4.1.1.5
-- see comment for new section 1.7.2 above.

MAHC Committee Response:

Disagree. The AHJ will determine applicability of a code within their jurisdiction.

Comment:

4.10.3.5--At least one hose bibb or other potable water source capable of connecting a hose shall be equipped with a backflow prevention device, and shall be located in each hygiene facility to facilitate cleaning. -- Editorial – given the potential for backflow in such settings, hose bibbs need to be equipped with backflow prevention devices.

MAHC Committee Response:

Disagree. Although we agree with the need for backflow prevention devices, no change is needed as Section 4.8.1.9.2 already requires all hose bibs to be equipped with a backflow prevention device.

Comment:

4.10.4.2.8--Aquatic venues located in lodging ~~and residential~~ settings shall be exempt from MAHC Section 4.10.4.2. -- this code applies only to "swimming pools and other public disinfected AQUATIC FACILITIES" as noted in section 1.3.2. Therefore the reference to "residential" is outside the scope of this code.
Also, this section should be relocated to immediately after the main Section 4.10.4.2

MAHC Committee Response:

Disagree. As discussed in the Annex, "Residential settings" includes condos, apartments, and homeowners associations, which are within the scope of this code.

Comment:

4.10.4.6.2--Glass, excluding mirrors, shall not be permitted ~~installed in the hygiene facility shall not be permitted~~ in hygiene facilities. -- proposed wording clarifies this section.

MAHC Committee Response:

Agree. Code revised as suggested.

Comment:

4.11.3.1--2) Where permitted, an approved reduced pressure zone (RPZ) BACKFLOW preventer installed according ~~to~~ with the plumbing CODE ~~and the AHJ~~. -- backflow prevention devices are installed in accordance with the plumbing code.

MAHC Committee Response:

Disagree. Health Departments typically have regulations pertaining to potable water supplies.

Comment:

4.12.1.11--All SPAS shall have a clearly labeled emergency shutoff or control switch for the purpose of stopping the motor(s) that provide power to the RECIRCULATION SYSTEM and hydrotherapy or agitation system shall be installed readily accessible to the BATHERS, in accordance with ~~section 680 of~~ the NEC. -- electrical Inspectors will require compliance with all applicable portions of the NEC, including Articles 680. There is no need to specify this Article. Also, Article numbers can change as the code is updated

MAHC Committee Response:

Agree. Code revised.

Comment:

4.2.1.2.1--The AHJ may grant a variance to the color requirements of this CODE. -- need to specify that this variance is for color only, as it could be misinterpreted as applicable for more than color.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.2.1.4.4--If dark colors are utilized for the POOL finish, these colors shall not ~~exceed a maximum height of~~ extend more than12 inches (300 mm) below the waterline. -- proposed wording clarifies this section.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.2.2.3.3.1--VENTILATION SYSTEM design for chemical STORAGE rooms shall conform to the International Mechanical CODE or Uniform Mechanical CODE, and either the International Fire CODE or the ~~Uniform~~ NFPA1 Fire CODE, and any applicable local CODES. -- The Uniform Fire Code is now called NFPA1 Fire Code.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.3.2.2--RECIRCULATION SYSTEMS and all materials used therein shall be suitable for their intended use and be installed in accordance with this CODE, as ~~certified~~ Listed and Labeled

by an ANSI-Accredited ~~third-party testing and~~ certification organization, and as specified by the manufacturer. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised as proposed.

Comment:

4.6.2.5--INDOOR AQUATIC FACILITY AIR HANDLING SYSTEM design, construction, and installation shall comply with ASHRAE standard 62.1 2013, Ventilation for Acceptable Indoor Air Quality, and/or applicable local CODES with additional requirements as stated in ~~section~~ MAHC Section 4.6.2.6. -- proposed wording clarifies this section.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.6.2.7.11.1--The AIR HANDLING SYSTEM shall have a PURGE capacity equal or greater than 2 times the level specified in the ASHRAE ~~CODE~~ standard. This PURGE would be activated manually and run for a time that achieved one complete air turn of the space. -- the ASHRAE reference is to a standard, not a code, and the proposed wording clarifies the intent of this section.

MAHC Committee Response:

Agreed. Wording edited to reflect this.

Comment:

4.6.3.1.1--Nothing in this CODE shall be construed as providing relief from any applicable requirements of the National Electric CODE (NEC) or other applicable code~~, except where modified by this MAHC~~. -- the MAHC should not be involved in modification of the NEC or any other code. Such activities could result in rejection of installations or products by other AHJs such as building inspectors, electrical inspectors, etc.

MAHC Committee Response:

Agreed. Edited.

Comment:

4.6.4.1.1--When designing POOL heating equipment, measures shall be taken to prevent PATRON exposure to water temperatures colder than the lowest ~~in excess of such lower~~

~~maximum~~ temperature ~~as shall be~~ recommended by the manufacturer for their equipment. -- current wording is confusing. Proposed wording clarifies the intent of this section.

MAHC Committee Response:

Disagree. Proposed change alters the intent.

Comment:

4.7.1.10 TABLE--Delete table -- Editorial – see rationale for section 4.7.1.10.1 above.

MAHC Committee Response:

Partially agree. State-by-state listing has been removed. However, the turnover times remain. As noted in the Annex, "These values were empirically derived for the MAHC to match typical U.S. practices at the time of this writing and can be changed as necessary to achieve the desired water quality goals."

Comment:

4.7.1.10.1--~~All AQUATIC VENUES shall comply with the following maximum allowable TURNOVER times show in MAHC Table 4.7.1.10: "Maximum Allowable Turnover Times."~~ -- Editorial -- this is a model national code. Maximum allowable turnover times should not be spelled out on a state-by-state basis, but rather, there should be a specific maximum turnover time for each of the specified types of venues. Therefore, this section as well as Table 4.7.1.10 needs to be deleted.

MAHC Committee Response:

Partially agree. State-by-state listing has been removed. However, the turnover times remain. As noted in the Annex, "These values were empirically derived for the MAHC to match typical U.S. practices at the time of this writing and can be changed as necessary to achieve the desired water quality goals."

Comment:

4.7.1.10.2--<u>4.7.7.1.10.1 -- section numbering change to reflect removal of 4.7.7.1.10.1 noted above.</u>

MAHC Committee Response:

Disagree. Sections not deleted as proposed.

Comment:

4.7.1.10.2.1--<u>4.7.1.10.1.1 -- section numbering change to reflect removal of 4.7.7.1.10.1 noted above.</u>

MAHC Committee Response:

Disagree. Sections not deleted as proposed.

Comment:

4.7.1.6.1.1--Submerged suction outlets, including sumps and covers, shall be Listed and Labeled ~~conform~~ to the requirements of ANSI/APSP-16 2011. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.7.1.2--Piping and piping system component materials shall be suitable for potable water contact and shall be Listed and Labeled to ~~meet~~ NSF/ANSI Standard 61 and NSF/ANSI Standard 14 as applicable. -- proposed wording is consistent with other sections in this code.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.7.1.2.1--~~Certified~~ Listed and Labeled

Piping and piping system component materials shall be ~~certified~~ Listed and Labeled by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.9.1.1--~~Certified~~ Listed and Labeled
Flow meters shall be Listed and Labeled to in accordance with NSF/ANSI Standard 50. -- proposed wording is consistent with other sections in this code

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.2.2.1.3--All filters shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.2.2.3.2--The granular media filter system shall be designed to backwash each filter at a rate of at least 15 gallons per minute per square foot (36.7 m/h) of filter bed surface area, unless explicitly prohibited by the filter manufacturer and~~/or~~ approved at an alternate rate as specified in their NSF/ANSI 50 listing. -- Editorial -- current language allows for manufacturer to specify alternate backwash rate without having that rate evaluated to the NSF 50 standard. Dismisses the need for certification to NSF 50.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.2.3.1.1--All precoat, filters (i.e., pressure and vacuum) shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.2.3.1.2.1--~~Certified~~ Listed and Labeled and Sized

Filter media shall be ~~certified~~ Listed and Labeled to NSF/ANSI Standard 50 by an ANSI-accredited certification organization and within the size specifications provided by the filter manufacturer and NSF/ANSI 50. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.2.3.1.2.3--Alternate types of filter media shall be ~~in accordance with~~ Listed and Labeled to NSF Standard 50. -- proposed wording is consistent with other sections in this code.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.2.4.1--Cartridge filters shall be installed in accordance with the filter manufacturer's recommendations and ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Editorial – proposed wording is consistent with other sections in this code.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.1.1.1--A chemical controller as specified in MAHC Section ~~4.7.3.2.10~~ 4.7.3.2.1.1 shall be provided and used for MONITORING and control of disinfectant and pH feed equipment. -- section 4.7.3.2.1.1 is the correct section to reference.

MAHC Committee Response:

Partially agree. Correct section is 4.7.3.2.8.

Comment:

4.7.3.2.1.1--The POOL shall be equipped with chemical feed equipment such as flow-through chemical feeders, electrolytic chemical generators, mechanical chemical feeders, chemical feed pumps, and AUTOMATED CONTROLLERs that is tested and ~~certified~~ Listed and Labeled by an ANSI-accredited certification organization ~~in conformance with~~ to NSF/ANSI 50. -- proposed wording is consistent with other sections in this code.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.2.6.7--UL ~~Certified~~ Listed and Labeled

The generator unit shall be Listed and Labeled ~~UL listed~~ to UL 1081~~and third party certified in accordance with UL 1081 (for electrical/fire/shock safety)~~. -- proposed wording clarifies this section..

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.2.8.2--All automated chemical controllers for pH and disinfectant MONITORING/control shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.1.1--ANSI ~~Certified~~ Listed and Labeled

SECONDARY DISINFECTION SYSTEMS shall be ~~certified~~ Listed and Labeled to ANSI/NSF 50 by an ANSI-Accredited ~~third-party testing and~~ certification organization ~~approved by the AHJ.~~
-- the AHJ always has the authority to specify approval of third-party certification organizations. There is no need to specify it here, especially since it is not specified in the numerous other areas of this code requiring certification. Remove 3rd party reference for consistency within the code.

MAHC Committee Response:

Partially agree. Code revised. "Approved by the AHJ" was added in response to the first round of public comment for the individual module.

Comment:

4.7.3.3.3.2--2) as ~~certified~~ Listed and Labeled by an ANSI-Accredited ~~third-party testing and~~ certification organization, and -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.3.7.1--An ISO9000:2000 accreditation or-listing ~~of~~ to NSF Standard 50 are both acceptable methods of meeting this equipment requirement. -- proposed wording is consistent with other sections in this code.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.4.3--2) as ~~certified~~ Listed and Labeled by an ANSI-Accredited ~~third-party testing and~~ certification organization, and 3) as specified by the -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.4.8--Comply with ~~Uniform~~ Fire Code Ozone system installations shall comply with ~~Annex G of~~ the ~~Uniform~~ NFPA1 Fire Code or ~~Section 3705 of~~ the International Fire Code and any other CODES, STANDARDs or requirements as mandated by the AHJ. -- proposed wording is correct since the text specifies both fire codes. Section numbers may change as these codes are revised. Therefore, it is better to simply state compliance with the code in general

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.5.1--WATER QUALITY TESTING DEVICEs and kits shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.6.1--Microbiological testing equipment and methods shall be EPA-Approved, EPA-Accepted, EPA-Equivalent, conforming to the latest edition of STANDARD Methods for the Examination of Water and Wastewater, or ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.9.1.1.4.1--Hose bibbs shall be installed in accordance with the ~~International~~ Plumbing Code ~~or~~ and shall be accessible within an adequate distance of the EQUIPMENT ROOM so that a hose can service the entire EQUIPMENT ROOM. -- installation shall be in accordance with either plumbing code, AND shall be accessible. Proposed wording clarifies intent of this section.

MAHC Committee Response:

Agree. Wording simplified and sections merged so there is no need to mention of plumbing code.

Comment:

4.9.1.7.2.2--There shall be no ducts, grilles, pass-throughs, or other openings connecting such EQUIPMENT ROOMs to CHEMICAL STORAGE SPACES, except as permitted by the ~~International~~ Fire Code. -- either the IFC or NFPA1 Fire Code could be required in a jurisdiction. Proposed wording allows for both of these codes.

MAHC Committee Response:

Agree

Comment:

4.9.1.8.4--Where refrigeration equipment such as an air-conditioner or dehumidifier is located indoors in a building intended for occupation, arrangements for refrigerant relief (if any) shall be according to the ~~International~~ Mechanical Code and ~~or~~ other applicable codes. -- either the IMC or UMC could be required in a jurisdiction. Proposed wording clarifies intent of this section.

MAHC Committee Response:

Disagree.

Comment:

4.9.2.5.2.3.1--3) the amount specified by INTERNATIONAL
MECHANICAL CODE ~~Sec. 502~~, or
4) the amount specified by the Uniform
Mechanical Code ~~Sec. 403.7,~~ or
-- section numbers may change as these codes are revised. Therefore, it is better to simply state compliance with the code in general

MAHC Committee Response:

Agree

Comment:

5.1.--Where the International Swimming Pool and Spa Code (ISPSC) or the Uniform Swimming Pool, Spa, and Hot Tub Code (USPSHTC) are adopted, these codes shall regulate the design, construction, installation, repair, and alteration of public pools and spas, aquatic features and associated facilities. The MAHC shall supplement these codes. Where differences occur between provisions of this code and the ISPSC or USPSHTC the most restrictive shall govern. Where there is a conflict between a general requirement and specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

Will need to re-number current section numbers 5.1 through 5.1.1.8
-- see comment for new section 1.7.2 above.

MAHC Committee Response:

Disagree. The MAHC has worked diligently with ICC and IAPMO building code groups to eliminate conflicts between the codes. The MAHC has changed some areas and building code will be altered in their next revisions to fix others. It does not work from a user standpoint to have to check across codes to see what is most stringent. If the MAHC is in place then that wording applies and vice versa for building code. The MAHC has included building-related issues where it is felt they are critical to protect public health. From a public health standpoint, these codes must overlap so those who run the pool programs have a say in what is constructed since they have to inspect and oversee these facilities through the life of the facility.

Comment:

5.4.1.2.1--The water in an AQUATIC VENUE with uncontrolled access and closed for more than seven days shall be drained or an approved SAFETY cover ~~that meets~~ <u>that is Listed and</u>

Labeled to ASTM F1346-91 shall be installed. -- proposed wording is consistent with other sections in this code,

MAHC Committee Response:

Agreed. Edited.

Comment:

5.6.3.1.3.--Electrical wiring, whether permanent or temporary, shall comply with the National Electrical CODE (NEC) ~~Article 225 and Article 680 and other applicable sections~~, or with applicable local CODE. -- see comment for section 4.12.1.11

MAHC Committee Response:

Agreed. Deleted.

Comment:

5.6.3.2.2--Repairs or maintenance to existing receptacles shall maintain compliance with the NEC, ~~especially NEC Article 680.22,~~ and with CFR 1910.304(b) (3) (ii). -- see comment for section 4.12.1.11

MAHC Committee Response:

Agreed, deleted.

Comment:

5.6.3.4.1--Maintenance or repair of electrical circuits or devices shall preserve grounding compliance required in ~~with~~ the NEC~~, especially Article 250 Grounding and Bonding, Article 680 Swimming Pools, Fountains, and Similar Installations, and Chapter 3,~~ or with applicable local CODES. -- Electrical Inspectors will require compliance with all applicable portions of the NSC, including Articles 680. There is no need to specify this Article. Also, Article numbers can change as the code is updated

MAHC Committee Response:

Agree, deleted

Comment:

5.6.7.4.2--A volume of water totaling at least ~~to~~ 4 gallons (15 L) per BATHER per day per facility shall be either

1) Discharged from the system, or
2) Treated with an alternate system meeting the requirements of MAHC Section 4.7.4.2.1 and reused.

-- the word “to” is unnecessary

MAHC Committee Response:

Agreed. Edited.

Comment:

5.7.2.1.1--High-rate granular media filters shall be operated at no more than 15 gpm/ft2 (m/h) when a minimum bed depth of 15 inches (38 cm) is provided per manufacturer's instructions. -- proposed wording completes the sentence and mandates compliance with manufacturer's instructions.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.7.2.2.1.1--The media shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization for use in the filter. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.2.2.2--Precoating of the filters shall be required in closed loop (precoat) mode to minimize the potential for media or debris to be returned to the POOL unless filters are ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization to return water to the POOL during the precoat process. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.2.2.3--Filter operation shall be per manufacturer and ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Deleted wording so change not necessary.

Comment:

5.7.2.2.3.1--Flow through the filter shall not be interrupted when switching from precoat mode to filtration mode, which could result based on the order of opening and closing valves unless the filters are ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization to return water to the POOL during the precoat process. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.2.2.7--Precoat filter media shall meet the filter manufacturer's recommendation for POOL use and shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Wording deleted as redundant so change not needed.

Comment:

5.7.2.2.7.1--Diatomaceous earth (DE), when used, shall be added to precoat filters in the amount of 1 to 2 pounds (0.45 to 0.91 kg) per 10 square feet of filtration surface area unless more is recommended by the filter manufacturer and the filter is ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization for a higher precoat media dosage rate. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.2.2.7.2--Perlite, when used, shall be added to precoat filters in a minimum amount of 0.5 to 1 pounds (0.23 to 0.45 kg) per 10 ft^2 (0.93 m2) of filtration surface area unless more is

recommended by the filter manufacturer and the filter is ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization for a higher precoat media dosage rate. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.2.3.1--Cartridge filters shall be operated in accordance with the filter manufacturer's recommendation and shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50 by an ANSI-accredited certification organization. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Agreed, edited.

Comment:

5.8.1.1.1--Cross connection control devices ~~such as check valves~~ shall be in good working order, and shall be tested as required by the AHJ. -- don't need to specify a specific type of device as an example. Also, check valves cannot be tested.

MAHC Committee Response:

Agreed, deleted.

Comment:

5.9.2.2--The chemical equipment used in controlling the quality of water shall be ~~certified~~ Listed and Labeled to NSF/ANSI 50, and used only in accordance with the manufacturer's instructions. -- proposed wording is consistent with other sections in this code,

MAHC Committee Response:

Agreed, edited.

Comment:

Acronyms--AHAC Aquatic Health Advisory Committee
ASME American Society of Mechanical Engineers
ATSDR Agency for Toxic Substances and Disease Registry
BBP blood borne pathogens

CEU Continuing Education Units
DBP Disinfection by-product
FC footcandles
HAEESS Hazardous Substance Emergency Events Surveillance System
IARC International Agency for Research on Cancer
IBC International Building Code
ICC International Code Commission
ICBO International Council of Building Officials
IESNA Illuminating Engineering Society of North America
IPC International Plumbing Code
ISPSC International Swimming Pool and Spa Code
METS Metabolic Equivalents
NEHA National Environmental Health Association
NEISS National Electrical Injury Surveillance System
NPDS National Poison Data System
PHMB Polyhexamethylene biguanide hydrochloride
SDS Secondary Disinfection System
SI Saturation Index
STEL short term exposure
TLV Threshold Limit Value
UL Underwriters Laboratories
USPSHTC Uniform Swimming Pool, Spa, and Hot Tub Code
UPC Universal Plumbing Code
USLSC United States Lifeguarding Standards Coalition
UVT UV Transmissivity
VFD Variable Frequency Drive
-- several of the acronyms are referenced only in the annex, which is not part of the code, and therefore they do not need to be included here. There is also a need to add additional acronyms to the list since they are used in the code.

MAHC Committee Response:

Agreed. Have edited as needed. One exception is that the list also covers the annex to avoid having to duplicate between code and annex.

Comment:

General--UL closely follows and participates in the development of the model codes in the United States including the Model Aquatic Health Code (MAHC). We applaud and fully support the efforts of the CDC to address the operation, maintenance and hygiene of public pools and spas, aquatic features and associated facilities. We have also become increasingly concerned with the overlap of this code with existing model codes - especially in the areas of design and construction. Historically, codes that overlap lead to voids, redundancies and conflicts in requirements. In this particular code we believe that the voids and conflicts in requirements will result in misinterpretations, non-uniform enforcement and potentially unsafe conditions for the general public. We do not believe it is the intent of the CDC to have the MAHC cover areas that are already fully developed and covered in other model codes. With

that understanding, we propose the following charging statement in Section 1.7.2 (reiterated in Sections 4.1.1.2 and 5.1). This would mitigate inconsistencies and ensure that the areas where other codes are more robust in the design and construction aspects will be clearly and appropriately enforced.

We believe that this direction supports the goals of the MAHC. We also believe that this would ensure proper enforcement of the existing model codes that have been developed through a robust code development process specifically focused on design and construction requirements. -- REFERENCE: 2012 International Swimming Pool and Spa Code.

2012 Uniform Swimming Pool, Spa, and Hot Tub Code.

MAHC Committee Response:

Disagree. The MAHC has worked diligently with ICC and IAPMO building code groups to eliminate conflicts between the codes. The MAHC has changed some areas and building code will be altered in their next revisions to fix others. It does not work from a user standpoint to have to check across codes to see what is most stringent. If the MAHC is in place then that wording applies and vice versa for building code. The MAHC has included building-related issues where it is felt they are critical to protect public health. From a public health standpoint, these codes must overlap so those who run the pool programs have a say in what is constructed since they have to inspect and oversee these facilities through the life of the facility.

Comment:

Glossary--Listed: Equipment, materials, or services included in a list published by an organization that is acceptable to the Authority Having Jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitability for a specified purpose.

Labeled: Equipment, materials or products to which has been attached a label, symbol or other identifying mark of an organization that is acceptable to the Authority Having Jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specific manner. -- Listed and labeled is the term used in the model codes promulgated by IAPMO, ICC, and NFPA. These terms are most familiar to AHJs, designers, engineers, contractors, and installers. Including these terms maintains consistency and clarity.

MAHC Committee Response:

Disagree. The MAHC thinks this terminology is understood and does not need to be defined in the MAHC.

(35) Joe Stefanyak, Ellis & Associates, Ocoee, FL
11 comments

Comment:

5.12.2.1--This entry creates a double standard. Lifejackets should be required to be provided free of charge at ALL aquatic venues

MAHC Committee Response:

Disagree. Lifejackets are allowed in wave pools because of the instability caused by the wave action. Offering lifejackets elsewhere could cause people to get a false sense of security in using recreational water that they should not use.

Comment:

6.2.1.1.3--Header is CPR Skills and only mentions AED but does not clearly require? Further evidence of this inconsistency is found in 6.3.4.3.2 (Lifeguard responsibilities) where AED is not even listed

MAHC Committee Response:

Agree. However, the Annex contains the following explanation as to why AED's are not required first aid equipment by the code: AEDs were considered to be included in this list, but due to the requirement for medical direction for AED use by trained rescuers, it was not included as it may not be within the AHJ's authority to mandate such equipment. However, AEDs are widely used and can be used for submersion events and any cardiac incident. If local protocols can be established, it is recommended to have an AED.

Comment:

6.2.1.1.3--If the intent is to require AED training excellent! If this is the case then training is required however the AED is not a facility-required equipment. This is another area where this code falls short of requiring best practices especially when the code recognizes the need for training. This will be a legal exposure.

MAHC Committee Response:

Agree. However, the Annex contains the following explanation as to why AED's are not required first aid equipment by the code: AEDs were considered to be included in this list, but due to the requirement for medical direction for AED use by trained rescuers, it was not included as it may not be within the AHJ's authority to mandate such equipment. However, AEDs are widely used and can be used for submersion events and any cardiac incident. If local protocols can be established, it is recommended to have an AED.

Comment:

6.3.3.3.2--#4 Assumes that ALL Aquatic Facilities permit Lifeguards to manage Fecal/vomit/blood when this is NOT reality. Primarily this is done by maintenance and/or Pool Operators. Suggest this entry be qualified to read...*Team members identified for response to fecal, vomit, or blood contamination on a surface and in the water as outlined in MAHC Section 6.5*

MAHC Committee Response:

Disagree. This section does not require that a lifeguard be responsible for the clean-up, it indicates that they must be knowledgeable of the actions that must be taken.

Comment:

General--Pool MGT companies would be excited to have 2 lifeguards required as this is their biggest exposure (HOA or other type of owner/operator doesn't want to pay for 2 people) by having to take the work at a property where the owner/operator doesn't want to pay. Result is a lifeguard who cannot be successful in an emergency situation, a drowned person and a lawsuit against both owner/operator and Pool Mgt company. If this code is to make a difference these details must be acknowledged, understood and new requirements to be put in place. Otherwise we are not going to stop the drowning's at these HOA and Hotel/Motels. This reality will be a major legal exposure which plaintiff's attorneys will have a field day and owners/operators will have no support from this code.

MAHC Committee Response:

Disagree. The code and annex address single guard situations. Bather safety is not intended to be compromised; non-lifeguard staff may need to fulfill certain roles as detailed in the required safety plan.

Comment:

General Staffing--Most of these answers are clearly solved with the addition of a second person who is trained (Supervisor or Lifeguard or CPR/Deck Extrication training) to work with the Qualified Lifeguard

MAHC Committee Response:

Agree. However, the code and annex address single guard situations. Bather safety is not intended to be compromised; non-lifeguard staff may need to fulfill certain roles as detailed in the required safety plan.

Comment:

General Staffing--How does a single guard facility meet 6.3.4.3.1? All Zones cannot be maintained during rotation when there is only a single lifeguard.

MAHC Committee Response:

No change suggested. A single guard may not be acceptable staffing if there is more than one zone of bather surveillance to comply with section 6.3.3.1.1.

Comment:

General Staffing--How does a single lifeguard maintain Rotation requirements? By code the lifeguard cannot be on the same position for more than 50 minutes and then is required to have a period of non-patron surveillance. So how is this accomplished?

MAHC Committee Response:

No change suggested. The Annex contains the following information: "For single QUALIFIED LIFEGUARD AQUATIC FACILITIES, the plan needs to address procedures for keeping PATRONS out of the water while the QUALIFIED LIFEGUARD is on break or performing other alternation of task activities. Other AQUATIC FACILITY staff may need to be at POOLSide to ensure that PATRONS stay out of the water, unless all PATRONS leave the AQUATIC VENUE and it is appropriately secured against entry. The "off-duty" QUALIFIED LIFEGUARD cannot be responsible for this activity as it does not meet the intent, which is to accomplish a reset of the vigilance level."

Comment:

General Staffing--How does a single guard adhere to 6.3.3.1.2? How do you accomplish #2, #3 and #4?

MAHC Committee Response:

No change suggested. The Annex contains the following information: "For single QUALIFIED LIFEGUARD AQUATIC FACILITIES, the plan needs to address procedures for keeping PATRONS out of the water while the QUALIFIED LIFEGUARD is on break or performing other alternation of task activities. Other AQUATIC FACILITY staff may need to be at POOLSide to ensure that PATRONS stay out of the water, unless all PATRONS leave the AQUATIC VENUE and it is appropriately secured against entry. The "off-duty" QUALIFIED LIFEGUARD cannot be responsible for this activity as it does not meet the intent, which is to accomplish a reset of the vigilance level."

Comment:

General staffing--How does a single guard manage extrication of a person from the water (with a spinal injury) as is required in 6.3.3.4.5

MAHC Committee Response:

No change suggested. The required facility safety plan must adequately address response to such a situation.

Comment:

General staffing--How does a single guard manage extrication of an unconscious guest who is in excess of the lifeguard's body weight as required in 6.3.3.4.5

MAHC Committee Response:

No change suggested. The required facility safety plan must adequately address response to such a situation.

(36) John Kelly, Iowa Dept of Public Health, Des Moines, Iowa
66 comments

Comment:

4.1.3.1.1--Replace language with: "The plan approval is based on a review that is limited in scope and time to identify obvious deficiencies. The approval in no way waives any of the requirements of the code and the facility will be required to correct any deficiencies identified through future inspections." -- Avoid confusion that a reviewed plan that has been approved somehow waives deficiencies that may not have been observed by the reviewer. A variance or waiver requires a separate and distinct process in which specific justification of equal health and safety must be provided.

MAHC Committee Response:

Disagree. The intent is to address the scope of the review. For example, the assumption of responsibility for reviewing plans for structural SAFETY and ensuring the AQUATIC FACILITY is designed to withstand anticipated loading, not only the POOL shell, but also in cases where the POOL may be located on an upper floor of a building or a rooftop is generally that of the local building department. So, the AHJ will state on the plans that their review does not include structural safety.

Comment:

4.1.3.1.5--Delete section -- The design professional is responsible to coordinate their design, review, and approval with other agencies.

MAHC Committee Response:

Disagree. It is appropriate and beneficial for the AHJ to coordinate/communicate plan review and approval with other involved agencies.

Comment:

4.1.6--Add "Construction Tolerance may not exceed the applicable design dimensions beyond the tolerance designated below:
Water depth in deep water: +/- 3"
Water depth in shallow water: +/- 2"

Stair tread depths and risers: +/- ½”
All dimensions not otherwise specified: +/- 2”
For skimmer pools water depth is measured based on the operating level at the centerline of the skimmer. Where the code references a maximum and/or minimum distance, no additional tolerance is allowed.”
-- A table of construction tolerances should be provided to avoid significant variations from the plans and specifications as well as the requirements of the MAHC

MAHC Committee Response:

Disagree. New section not needed, tolerances already specified in applicable design sections.

Comment:

4.11.1.1.1--~~Other water sources such as lakes or springs may be approved to serve an AQUATIC FACILITY by the AHJ~~. -- A variance process is already addressed in the code under 5.2.3 Variances. It is confusing what criteria and approval process the AHJ would be using to evaluate if not through a variance process. The variance process allows a variance request to be submitted for any requirement of the code.

MAHC Committee Response:

Disagree. Annex provides additional information.

Comment:

4.11.1.1.3--~~Exceptions to MAHC Section 4.11.1.1.2 may be made by the AHJ with evidence that such water has met all EPA potable water quality STANDARDs~~. -- A variance process is already addressed in the code under 5.2.3 Variances. It is confusing what criteria and approval process the AHJ would be using to evaluate if not through a variance process. The variance process allows a variance request to be submitted for any requirement of the code.

MAHC Committee Response:

Disagree. Annex provides additional information.

Comment:

4.11.6.2--~~If a municipal sanitary sewer system is not available, wastewater from an AQUATIC VENUE may be discharged to the ground surface at a suitable location as approved by the AHJ, as long as the wastewater does not cause erosion, and does not create a threat to public health or SAFETY, a nuisance, or unlawful pollution of public waters~~. -- A variance process is already addressed in the code under 5.2.3 Variances. It is confusing what criteria and approval process the AHJ would be using to evaluate if not through a variance process. The variance process allows a variance request to be submitted for any requirement of the code.

MAHC Committee Response:

Disagree. The code includes performance criteria to assess the acceptability of surface discharge.

Comment:

4.12.2.1.2--Delete :~~3) World Water Park Considerations for Operating Safety. 2004. A handbook for Risk Management and Operating Safety at Waterparks.~~
~~4) EN 1069-1:2010 Water slides – Part 1: Safety Requirements and test methods~~
~~5) EN 1069 -2: 1020 Water slides – Part 2: Operation and Risk Management.~~ -- World Water Park is a proprietary manual that is not available to the public, these other two referenced standards are European standards.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.2.1.3--"The structural design of a WATER SLIDE and the materials used in its construction shall conform with appropriate structural engineering practices. The support structure for a water slide and for any access stairs or ramps shall be designed and constructed to withstand the both the static and dynamic structural loading including wind forces. Any restrictions on use including maximum design weight of riders shall be clearly indicated. " -- Original statement does not provide much substance, expanded to provide more specific guidance and to require any restrictions on use to be clearly indicated.

MAHC Committee Response:

Disagree. The code is intended to be performance-based instead of prescriptive, where practical. The design engineer is responsible for determining the appropriate structural engineering practices and conformance with such.

Comment:

4.12.2.1.3.1--Add: "A stairway providing access to the platform at the top of a waterslide shall be at least 24" wide and provided with handrails. The stairway and platform shall have railings at least 42" high above the decking to protect against falls. Where the waterslide start tub or similar surfaces are installed adjacent to the railing, the minimum height of the railing shall be adjusted to be at least 42" above the curb of the start tub or other standing surfaces." -- Start tubs and other standing surfaces above the platform grating reduce the effective height of the railing compromising fall protection.

MAHC Committee Response:

Disagree. The ASTM Standard F2376 addresses slide access.

Comment:

4.12.2.1.3.2--Add: "Water slides that are designed to accommodate multiple riders simultaneously on a tube or raft shall be equipped with a scale to confirm that the group of riders are within the weight limits established for the water slide." -- Some slides are designed to allow multiple riders on a tube or raft. While the weight limit on a flume designed for a single rider is typically 300 lbs, some of the 4 person tube rides allow a combined weight of only 700 lbs or an average weight of only 175 lbs per rider which is less than the weight of an average adult male. It does not appear reasonable to expect either the riders or operators to know the combined weight of a group of riders with accuracy without the addition of a scale. The combined weight of the riders shall be maintained below the weight limit established by the manufacturer. A scale shall be provided to verify that each group of riders falls within the weight limit of their respective tube. The scale may include a simply red light/green light indicator for each type of tube rather than requiring the specific weight to be displayed.

MAHC Committee Response:

Disagree. The facility operator is responsible for posting signs with use rules and requirements and ensuring compliance with those requirements. The code is performance-based where possible instead of prescriptive.

Comment:

4.12.7.11--Add: "Underwater lighting shall be installed to specifically light the area beneath the bulkhead at each operating position to prevent shadows beneath the bulkhead that could obscure a victim under the water or the designer shall certify that visibility and required lighting levels are maintained beneath the bulkhead and the all areas beneath the bulkhead are readily observable." -- Bulkheads interfere with overhead lighting and can create shadows on the bottom of the swimming pool which can obscure visibility.

MAHC Committee Response:

Disagree. Additional section not needed as section 4.6.1.5.1.1 Underwater Lighting, addresses necessary locations "so that all portions of the AQUATIC VENUE, including the AQUATIC VENUE bottom and drain(s), may be readily seen."

Comment:

4.12.7.12--Add: "The travel of a bulkhead shall be limited such that it cannot encroachment on any required clearances of other features such as diving boards or design modifications shall be incorporated that prevent use of other features when the required clearances have been compromised by the position of the bulkhead." -- Moveable bulkheads can encroach on required clearances of other features.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.8.8--A BARRIER shall be provided to separate an INTERACTIVE WATER PLAY VENUE from another BODY OF WATER within the same facility unless the INTERACTIVE WATER PLAY VENUE is separated by a distance of at least 50 feet (15.2 m)~~15 feet (4.57 m)~~ from other BODIES OF WATER. -- 15 feet does not provide a parent sufficient space to intercept a child before they can reach a deeper pool. Iowa code requires at least 50 ft separation between wading pools and swimming pools.

MAHC Committee Response:

Disagree. Insufficient data/information provided to support additional separation distance which will likely increase the overall space requirements for the aquatic facility with corresponding cost increase for construction.

Comment:

4.12.9.2--A BARRIER shall be provided to separate a WADING POOL from other POOLS unless the WADING POOL is separated by a distance of 50 feet (15.2 m) ~~15 feet (4.57 m)~~ from other BODIES OF WATER. -- Iowa 15.5(13)"l"(4) - 15 feet does not provide a parent sufficient space to intercept a child before they can reach a deeper pool. Iowa code requires at least 50 ft separation between wading pools and swimming pools.

MAHC Committee Response:

Disagree. Insufficient data/information provided to support additional separation distance which will likely increase the overall space requirements for the aquatic facility with corresponding cost increase for construction.

Comment:

4.12.9.2.1--The BARRIER shall not be required to be a complete ENCLOSURE of the WADING POOL provided the shortest distance of travel between the WADING POOL around the BARRIER to the other POOL is a minimum of 50 feet (15.2 m)~~15 feet (4.57 m)~~. -- Iowa 15.5(13)"l"(4) - 15 feet does not provide a parent sufficient space to intercept a child before they can reach a deeper pool. Iowa code requires at least 50 ft separation between wading pools and swimming pools.

MAHC Committee Response:

Disagree. Insufficient data/information provided to support additional separation distance which will likely increase the overall space requirements for the aquatic facility with corresponding cost increase for construction.

Comment:

4.2.1.2.1--~~The AHJ may grant a variance to the requirements of this CODE. --~~ The variance process is already addressed in the code under 5.2.3 Variances. It is confusing why specific sections reference variances while other sections do not. The variance process allows a variance request to be submitted for any requirement of the code.

MAHC Committee Response:

Partially agree. However, no change made. As noted, certain specific sections reference the acceptability of issuing variances while other sections do not. In accordance with Section 5.2.3.variances can be issued for any code section, by specifically noting certain sections, it is intended to make it clear to the AHJ that, subject to the criteria in Section 5.2.3, it is likely that there are alternatives that can meet the intent of the code without jeopardizing health and safety.

Comment:

4.2.1.2.3.1--~~Permission in writing from the AHJ for the use of graphics shall be obtained before the graphics are used.~~ -- Permission should be granted through a variance under 5.2.3 There is no other process identified with criteria established by which permission would be granted. This would create an arbitrary application of this rule.

MAHC Committee Response:

Disagree. Performance criteria are contained in Section 4.2.1.2.3, Design Parameters. This section addresses written authorization from the AHJ. This is intended to allow for review by the AHJ to determine conformance with the performance criteria prior to installation.

Comment:

4.2.1.4.2--SKIMMER POOLS shall have a 6 inch (150 mm) to ~~12~~ 9 inch (300 mm) high waterline finish that meets the requirements of MAHC Section 4.2.1.4 and 4.2.1.4.1. -- On skimmer pools the handhold generally is located at the deck level above the waterline finish. 12” is too far above the water surface for the young children to reach the handhold. Based on anthropometric data for children between the ages of 6.5 to 7.5 the difference between their stature and vertical grip reach averages 9.3 inches.

MAHC Committee Response:

Disagree. This section is about finish of the pool wall associated with the waterline, not about the water surface level.

Comment:

4.5.10.4--“On a zero depth entry, the bottom and sides shall be marked with a colored warning stripe at least 4 “ wide at the 1 ft. (green stripe), 2 ft. (yellow stripe), and 3 ft. (red stripe) depths. A safety rope shall be installed within 12 inches on the shallow side if the warning stripe at the 3 ft depth.” -- Based on drowning injury data such as that collected by the Redwoods Group, the 3 feet to 5 feet depth is typically most dangerous to young non-swimmers at swimming pools. To reduce the risk young non-swimmers should remain in water at or below chest height. Based on anthropometric data typical chest height at Axilla for children 5.5-7.5 y/o is 35.6.

MAHC Committee Response:

Disagree with changing code at this time. Additional data/information needed to demonstrate that the intended benefits/outcome are likely to be accomplished without creating unintended negative consequences.

Comment:

4.5.11--~~Access for disabled persons shall conform to ADA STANDARDs as approved by the Department of Justice.~~ -- Federal laws already apply. To single out a specific federal law while not listing all applicable federal laws creates confusion. Also local jurisdictions generally have no authority to interpret or enforce federal laws.

MAHC Committee Response:

Disagree. Provides clear indication to designer/owner that compliance with ADA standards is necessary.

Comment:

4.5.12.1--In water depth up to and including 5 ft, floors and walls below the water line shall be white or light pastel in color such that a BATHER is visible on the POOL floor. In pools with water depths exceeding 5 ft the floors and walls below the waterline shall be white. -- A solid white color has a higher light reflective value than other light colors aiding with the visibility in deeper water.

MAHC Committee Response:

Disagree. The code is intended to be performance-based instead of prescriptive, where practical.

Comment:

4.5.12.1.3--~~Darker colors or designs such as rock formations may be permitted by the AHJ as long as the above criteria are met.~~ --

MAHC Committee Response:

Disagree. No rationale provided for proposed change.

Comment:

4.5.15.1--Where not otherwise exempted, every POOL shall be provided with hand holds (PERIMETER GUTTER SYSTEM, coping, horizontal bars, recessed handholds, cantilevered DECKing) around the perimeter of the POOL where the water depth at the wall exceeds 24 inches (0.6 m). These handholds shall be installed not greater than ~~12~~ 9 inches (305 mm) above, or 3 inches (75 mm) below static water level. -- 12” is too far above the water surface for the young children to reach the handhold. Based on anthropometric data for children between the ages of 6.5 to 7.5 the difference between their stature and vertical grip reach averages 9.3 inches.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.17.1--Add: "The deck shall be marked with the words "Bench Below" and the bench surface should be marked "No Standing"" in red letters at least 4 inches high spaced not more than 10 feet apart center to center." -- Benches are not an approved point of access to or egress from the pool. No handrails are provided and the depth of the bench is much greater than the riser height allowed for stairs. When following up on incidents involving children falling from benches into water too deep the designers indicated the children should not be standing on the benches but this hazard is not currently communicated to operators, the children or their parents.

MAHC Committee Response:

Disagree. The leading and horizontal edges are required to be marked with a contrasting color for visibility of the bench and depth markings around pools are required to communicate water depths to parents and other patrons.

Comment:

4.5.17.3--UNDERWATER BENCHES may be installed in areas of varying depths, but the maximum POOL water depth in that area shall not exceed 3 feet (0.9 m) ~~5 feet (1.5 m)~~. -- Based on drowning injury data such as that collected by the Redwoods Group and others, the 3 feet to 5 feet depth is typically most dangerous to young non-swimmers at swimming pools. To reduce the risk young non-swimmers should remain in water at or below chest height. Based on anthropometric data typical chest height as Axilla for children 5.5-7.5 y/o is 35.6. Several hazards are associated by placing the benches in the deeper water first as young children often stand on the benches where the pool is too deep and need assistance when they fall off the end of the bench, second it separates the parents and caregivers away from the children they are supervising.

MAHC Committee Response:

Partially agree. No change at this time as additional data needed regarding rescue/submersion incidents from underwater benches. Issue has been included in research agenda.

Comment:

4.5.17.5--Add: "Use of hydrotherapy jets shall be limited to spas and therapy pools." -- Benches that incorporate underwater jets directed away from the seatback create a hazard in pools utilized by young non-swimmers. Through previous inspections some similar jets were observed to entrain air and obscure visibility on the bottom of the swimming pool in the vicinity of the jets. In addition at several incidents that the department is reviewing there are questions relating to similar jets and their ability to push young children from the bench, or prevent them from reaching the handhold at edge of the pool in the location of the bench, or simply imparting

motion to an unconscious victim making it more difficult to identify an unconscious victim in need of rescue.

MAHC Committee Response:

Partially agree. No change at this time as additional data needed regarding rescue/submersion incidents related to hydrotherapy jets from underwater benches. Issue has been included in research agenda.

Comment:

4.5.19--~~4.5.19 Underwater Shelves D&C~~
~~4.5.19.1 Immediately Adjacent D&C~~
~~UNDERWATER SHELVES may be constructed immediately adjacent to water shallower than 5 feet (1.5 m).~~
~~4.5.19.2 Nosing D&C~~
~~UNDERWATER SHELVES shall have a slip-resistant, color contrasting nosing at the leading horizontal and vertical edges on both the top of horizontal edges and leading vertical edges and should be viewable from the DECK or from underwater.~~
~~4.5.19.3 Maximum Depth D&C~~
~~UNDERWATER SHELVES shall have a maximum depth of 24 inches (0.6 m).~~
-- The abrupt change in depth created by an underwater shelf is a drowning hazard to young non-swimmers. By labeling these as underwater shelves rather than citing them as an abrupt change of depth and a violation of sloping requirements for the bottom of the pool these are being incorporated in pools for use by young non-swimmers circumventing both the sloping requirements for the bottom of the pool and alternatively the barrier requirements relating to wading pool. A properly constructed zero depth entry provides a gradual slope and horizontal separation from deeper water at a 1:12 slope, but in the designs I have seen proposed for underwater shelves they were proposed immediately adjacent to and abruptly dropping off an unprotected edge to water 3 ft to 5 ft.. Based on drowning injury data such as that collected by the Redwoods Group and others, the 3 feet to 5 feet depth is typically most dangerous to young non-swimmers at swimming pools.

MAHC Committee Response:

Disagree. See Annex for explanation and rationale for underwater shelves.

Comment:

4.5.2.1--~~The bottom slope of a POOL shall be governed by the following parameters, but variances may be granted for special uses and situations so long as public SAFETY and health are not compromised. --~~ The variance process is already addressed in the code under 5.2.3 Variances. It is confusing why specific sections reference variances while other sections do not. The variance process allows a variance request to be submitted for any requirement of the code

MAHC Committee Response:

Partially agree. However, no change made. As noted, certain specific sections reference the acceptability of issuing variances while other sections do not. In accordance with Section 5.2.3.variances can be issued for any code section, by specifically noting certain sections, it is intended to make it clear to the AHJ that, subject to the criteria in Section 5.2.3, it is likely that there are alternatives that can meet the intent of the code without jeopardizing health and safety.

Comment:

4.5.20.1.6--Depth markers shall be installed at not more than 25 foot (7.6 m) intervals around the POOL perimeter edge and according to the requirements of this section. In addition, for water less than 5 ft in depth, the depth shall be marked at 1 ft depth intervals. -- In water less than 5 ft in depth, the 25 foot spacing allows more than 2 feet of depth change at a slope of 1:12. At a minimum in water less than 5 ft in depth the depth should be marked at 1 ft intervals as these depths can be among the most dangerous for young non-swimmers.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.20.5.3--"Safety Rope: Where the slope of a swimming pool bottom in shallow water changes from 1:12 or less to a slope greater than 1:12, or at the 5 ft depth area, the bottom and sides shall be marked with a stripe at least 4 inches wide in a color contrasting with the pool bottom and sides. The stripe shall be on the shallow side of the slope change or 5 ft depth area within 6 inches of the slope change or 5 ft depth area. A safety rope shall be installed within 12 inches on the shallow side of the stripe. The safety rope shall be a float line with floats no more than 5 ft apart." -- REFERENCE: Iowa 15.5(13)"f"(3) & (4)

MAHC Committee Response:

Disagree. Unnecessary, Section 4.5.2.2 prohibits slopes steeper than 1:12 in water depths less than 5 feet.

Comment:

4.5.20.6--~~Symmetrical AQUATIC VENUE designs with the deep point at the center may be allowed by providing a dual depth marking system which indicates the depth at the wall as measured in MAHC section 4.5.20.3.1 and at the deep point~~.-- Based on drowning injury data such as that collected by the Redwoods Group and others, the 3 feet to 5 feet depth is typically most dangerous to young non-swimmers at swimming pools. A bowl type design is not intuitive to children and difficult to mark limits of travel with depth markers and float lines.

MAHC Committee Response:

Disagree. Other design requirements such as bottom slope, safety ropes, etc still apply to this type of design.

Comment:

4.5.4.2--Ladders, recessed stairways, or recessed steps shall be provided as a ~~Acceptable~~ means of access / egress from water greater than 5 ft deep. Ramps (including zero depth entries) and stairs may also be used as a means of access / egress in water less than 5 ft deep. ~~shall include stairs / hand rails, grab rails / RECESSED STEPS, ladders, ramps, swimouts, and zero-depth entries. --~~The walls of deep water must be vertical to avoid obstructing access to and visibility of the sides and bottom. Stairs must be recessed from the pool wall rather than projecting out into the deeper water and ramps must be limited to shallow water.

MAHC Committee Response:

Disagree. Proposed changes are unnecessary.

Comment:

4.5.5.3--"Where stairs are provided in pool water depths greater than 4 feet, they shall be recessed stairways, a maximum of 5 feet in width, and the lowest tread shall be not less than 4 feet below the deck elevation" -- The stairs should not project from the pool wall as the walls in deep water must be vertical, the width must be limited to prevent visual obstructions from the deck into the pool at the deep water One design that was submitted to the department had deep water shelves, stairs and a spa along one side of deep water and a wing wall with a bench along the other side. The design severely limited the visibility into the deep water. Limiting the width of the stairs and limiting the location of other features allow for the lifeguard to be properly positioned near the vertical pool wall rather than pulled back excessively from the vertical pool wall obscuring the visibility into the bottom of the pool.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.5.5.5--Delete column for T-1 and T-1-Convex, Concave, Triangular. -- The tread depths should be uniform. Rather than an irregular top step at Convex, Concave, and Triangular designs, the irregular shape shown should be part of the deck so that all steps below deck level are of a uniform tread depth. Irregular tread depths and shapes create a tripping hazard particularly for those such as the visually impaired.

MAHC Committee Response:

Disagree. Having corner stairs, or stairs that emanate from the corner of a pool, are very common currently, especially in smaller pool such as those found at hotels and apartments. These lead themselves into needing irregular shaped stairs, especially the curved ones in the middle of Fig 4.5.4.6.3. It is the intent for all tread depths after this initial step to be uniform. Similar caveat allows for irregular dimensioned top step for ordinary rectangular stairs.

Comment:

4.5.5.7--Stair risers shall have a minimum uniform height of 6 inches (0.15 m) and a maximum height of 12 inches (0.3 m) from the bottom of the pool to the deck, with a tolerance of 1/2 inches (13 mm) between adjacent risers. Stairs shall not be used underwater to transition between two sections of pool of different depths. -- Some designs have used stairs underwater to connect two sections of a pool with different depths. This creates a hidden hazard that is particularly dangerous for young children and non-swimmers and violates the sloping requirements for the bottom of the pool. Must be clear that stairs are points of access or egress from the deck into the pool.

MAHC Committee Response:

Partially agree. The first of the 2 proposed changes seems to add confusion as to the intent, no change made. Second comment, Code revised.

Comment:

4.5.6.3--The upper railing surface of hand rails shall extend ~~above~~ past the POOL coping or DECK a minimum of 28 inches (0.7 m). -- The height of the railing is address in 4.5.6.6 and does not match 4.5.6.3. The handrail must extend a fixed distance beyond the coping to allow patrons to get off the steps and onto the decking with the support of the handrail.

MAHC Committee Response:

Partially agree. Table and code language made consistent (28"). Disagree to change "above" to "past." "Above" is correct and what was intended.

Comment:

4.5.6.6--In Table 4.5.6.7, change H-1 Minimum to 34" and H-1 Maximum to 38" -- For consistency with handrail heights typically found in building codes. Example IBC 1012.2

MAHC Committee Response:

Disagree. No change at this time. Dimensions accommodate commercial products currently available.

Comment:

4.6.4.4--"Where POOL-water heaters use COMBUSTION and are located inside a building, the space in which the heater is located shall be considered to be an EQUIPMENT ROOM. The requirements of MAHC Section 4.9.1 shall apply. A carbon monoxide detector with local alarming shall be installed in all equipment rooms containing fuel burning equipment and in all rooms that are immediately adjacent to spaces containing fuel burning equipment or vents carrying the products of combustion." -- Last year 3 people died in 2 separate incidents in a single hotel room in Boone NC due to carbon monoxide from a swimming pool heater. A USA Today article dated January 8, 2013 indicated that 8 people have died and at least 170 others

have been treated for carbon monoxide poisoning in the previous 3 years in hotels. In some jurisdictions pool water heaters may fall outside of the scope of local boiler inspectors and are boiler inspection is generally beyond the scope of pool inspectors.

MAHC Committee Response:

Disagree. Defer to building codes for carbon monoxide detection/notification requirements.

Comment:

4.6.7.1.1--~~Alternate locations or the use of bottled water shall be evaluated by the AHJ~~. -- A variance process is already addressed in the code under 5.2.3 Variances. It is confusing what criteria and approval process the AHJ would be using to evaluate if not through a variance process. The variance process allows a variance request to be submitted for any requirement of the code.

MAHC Committee Response:

Disagree. It is expected that there are alternatives that can meet the intent of the code and can be evaluated without the necessity of going through the variance process.

Comment:

4.6.9--~~Concessions for food and drink in an AQUATIC FACILITY shall meet all AHJ requirements.~~ - Many other federal, state, and local laws, rules, and ordinances may apply to a facility. It is confusing why this section was included with no clear requirements.

MAHC Committee Response:

Disagree. The intent is to ensure that the facility owner/designer is aware that additional requirements and approvals may be necessary for this aspect of the facility design.

Comment:

4.7.1.10.3--~~The AHJ may grant a TURNOVER time variance for AQUATIC VENUES with extreme volume or operating conditions based on proper engineering justification.~~ -- The variance process is already addressed in the code under 5.2.3 Variances. It is confusing why specific sections reference variances while other sections do not. The variance process allows a variance request to be submitted for any requirement of the code.

MAHC Committee Response:

Partially agree. However, no change made. As noted, certain specific sections reference the acceptability of issuing variances while other sections do not. In accordance with Section 5.2.3.variances can be issued for any code section, by specifically noting certain sections, it is intended to make it clear to the AHJ that, subject to the criteria in Section 5.2.3, it is likely that there are alternatives that can meet the intent of the code without jeopardizing health and safety.

Comment:

4.7.1.3.1.1.1--~~Alternative designs shall be allowed based on adequate engineering justification~~. -- A variance process is already addressed in the code under 5.2.3 Variances. It is confusing what criteria and approval process the AHJ would be using to evaluate if not through a variance process. The variance process allows a variance request to be submitted for any requirement of the code

MAHC Committee Response:

Disagree. It is expected that there are alternatives that can meet the intent of the code and can be evaluated without the necessity of going through the variance process.

Comment:

4.7.1.3.1.4--~~All other types of INLET systems not covered in this section shall be subject to approval by the AHJ with proper engineering justification. --~~ A variance process is already addressed in the code under 5.2.3 Variances. It is confusing what criteria and approval process the AHJ would be using to evaluate if not through a variance process. The variance process allows a variance request to be submitted for any requirement of the code

MAHC Committee Response:

Disagree. It is expected that there are alternatives that can meet the intent of the code and can be evaluated without the necessity of going through the variance process.

Comment:

4.7.1.3.3.4--~~Wall INLETS that are part of a manufactured gutter system do not need to be designed to provide directional flow~~. -- No reference standard was given relating to a manufactured gutter system and no criteria was given for the design. A variance process is already addressed in the code under 5.2.3 Variances. This would best be addressed through a variance. The variance process allows a variance request to be submitted for any requirement of the code

MAHC Committee Response:

Partially agree. "Manufactured gutter system" has been clarified/ defined in the section.

Comment:

4.7.1.8.2.2--Add: "<u>Design professional shall submit calculation for TDH as specified for each recirculation system</u>." -- Submission of calculations provides a record of design basis for future changes to filters, heaters, etc.

MAHC Committee Response:

Disagree. Change not necessary, since it is already required in Section 4.1.2.3.6.

Comment:

4.7.5.2.2--~~The AHJ may grant a TURNOVER time variance for AQUATIC VENUES with extreme volume or operating conditions based on proper engineering justification~~. -- The variance process is already addressed in the code under 5.2.3 Variances. It is confusing why specific sections reference variances while other sections do not. The variance process allows a variance request to be submitted for any requirement of the code.

MAHC Committee Response:

Partially agree. However, no change made. As noted, certain specific sections reference the acceptability of issuing variances while other sections do not. In accordance with Section 5.2.3.variances can be issued for any code section, by specifically noting certain sections, it is intended to make it clear to the AHJ that, subject to the criteria in Section 5.2.3, it is likely that there are alternatives that can meet the intent of the code without jeopardizing health and safety.

Comment:

4.8.1.6--Change “Wing Walls or Peninsulas” to “Wing Walls” on all requirements under section 4.8.1.6. -- Wing walls and peninsulas are different. A peninsula is a deck projecting out into a pool and should meet all of the decking, marking, and skimming requirements. A wing wall projects out into a swimming pool but is narrower than a peninsula and as such introduces additional hazards.

MAHC Committee Response:

Disagree. Wing Walls or Peninsulas are defined terms.

Comment:

4.8.1.6.7--Add: “<u>The designer shall review the impact of wing walls on Patron zone surveillance and provide the owner a diagram showing lifeguard positioning to avoid visual and physical obstructions relative to surveillance and rescue.</u>” -- Wing walls can create significant visual and physical obstructions that impair the ability to provide effective surveillance and rescue. Designers can utilize plan views, sections, and even 3D design software to understand the visual and visual obstructions. It is important for owners to understand during design how a particular design will impact the required lifeguard staffing throughout the life of a facility.

MAHC Committee Response:

Disagree. Change not necessary as section 4.5.1 Design for Risk Management already addresses this. Design of AQUATIC FACILITIES and/or AQUATIC VENUE(s) shall include the owner and/or an aquatic risk management consultant to incorporate operational considerations such as the layout of zones of PATRON surveillance.

Comment:

4.8.1.6.8--Add: "Wing walls shall not be used immediately adjacent to a zero depth entry, immediately adjacent to water greater than 5 ft in depth, or to separate sections of pools with water depths varying by more than 6 inches in water in depth." -- Abrupt changes in depth are particularly hazard to young children and non-swimmers. Historically slopes of the bottom of the swimming pool provide horizontal separation between areas of the swimming pools at different depths limiting exposure and access to deeper water. Large depth changes separated only by a wing wall create a hazard to young children and non-swimmers.

MAHC Committee Response:

No change at this time. A change such as this needs additional stakeholder input. Recommendations for a code change with supporting documentation should be submitted in advance for consideration at the 2015 CMAHC conference.

Comment:

4.8.1.7.9--Add: "The designer shall review the impact of islands on Patron zone surveillance and provide the owner a diagram showing lifeguard positioning to avoid visual and physical obstructions relative to surveillance and rescue." -- Islands can create significant visual and physical obstructions that impair the ability to provide effective surveillance and rescue. Designers can utilize plan views, sections, and even 3D design software to understand the visual and visual obstructions. It is important for owners to understand during design how a particular design will impact the required lifeguard staffing throughout the life of a facility.

MAHC Committee Response:

Disagree. Change not necessary as section 4.5.1 Design for Risk Management already addresses this. Design of AQUATIC FACILITIES and/or AQUATIC VENUE(s) shall include the owner and/or an aquatic risk management consultant to incorporate operational considerations such as the layout of zones of PATRON surveillance.

Comment:

4.8.2.2.4--Add: "Diving boards or platforms greater than 1m in height shall be accessed by a stairway." -- Falls to the concrete from ladders and through guardrails at high dives have resulted in multiple deaths and serious injuries. A quick google search found incidents relating to injuries or deaths from falls from 3 m board and ladders in the news at Lake Brantley High School (Altamonte Springs, FL), Woodland Park Pool (Lexington, KY), Lebanon Pool (Lebanon TN), (Hackettstown, NJ).

MAHC Committee Response:

Disagree. Such a change would dramatically change the entire design of deck sizing and needs to be brought up as a position statement to be discussed as part of the CMAHC process.

Comment:

4.8.5.1.1.1--~~Alternate systems or devices are allowed with approval of the AHJ in situations when a telephone is not logistically sound, and an alternate means of communication is available, which meet the requirements of MAHC Section 5.8.5.2.1.2~~. -- A variance process is already addressed in the code under 5.2.3 Variances. It is confusing what criteria and approval process the AHJ would be using to evaluate if not through a variance process. The variance process allows a variance request to be submitted for any requirement of the code

MAHC Committee Response:

Partially agree. However, no change made. As noted, certain specific sections reference the acceptability of issuing variances while other sections do not. In accordance with Section 5.2.3.variances can be issued for any code section, by specifically noting certain sections, it is intended to make it clear to the AHJ that, subject to the criteria in Section 5.2.3, it is likely that there are alternatives that can meet the intent of the code without jeopardizing health and safety.

Comment:

6.2.1.3.10--Add: "Certificate Recognition- The AHJ may, at its discretion, choose to recognize, not to recognize, or rescind a previously recognized certificate of a LIFEGUARD based upon demonstration of inadequate knowledge, poor performance, or due cause. " -- To protect the public the AHJ must be able to not recognize the certificate based upon demonstration of inadequate knowledge, performance, or due cause.

MAHC Committee Response:

Disagree. The lifeguard agency should have the responsibility to rescind a certificate issued by their agency. The facility operator is responsible for code compliance and should address deficiencies relating to a lifeguard's demonstration of inadequate knowledge and/or poor performance.

Comment:

6.2.1.3.11--Add: "Course Recognition- The AHJ may, at its discretion, recognize, choose not to recognize, or revoke a previously accepted course based upon demonstration of inadequate knowledge or poor performance of its LIFEGUARDS, or due cause." -- To protect the public the AHJ must be able to not recognize the courses based upon demonstration of inadequate knowledge or poor performance of its lifeguards or due cause.

MAHC Committee Response:

Disagree. They already have this authority as per 6.2.1 Lifeguard Qualifications
"A QUALIFIED LIFEGUARD shall:
1) Have successfully completed an AHJ-recognized lifeguard training course offered by an AHJ-recognized training agency. " However, please note, poor lifeguards are generally not a direct correlation to the Lifeguard Agency but rather the on-site training and/or lack of In-Service or effective In-Service.

Comment:

6.2.1.3.8--Add: "Certificate Suspension and Revocation- Course providers shall have procedures in place for the suspension or revocation of certificates." -- To protect the public there must be procedures to revoke to suspend certificates.

MAHC Committee Response:

Agree. Code revised.

Comment:

6.2.1.3.8.1--Add: "Evidence of Health Hazard- Course providers may suspend or revoke a LIFEGUARD'S certificate based on evidence that the LIFEGUARD'S actions or inactions unduly created SAFETY and health hazards." -- To protect the public there must be procedures to revoke to suspend certificates.

MAHC Committee Response:

Disagree. Lifeguard Training Agencies can determine conditions for suspension or revocation.

Comment:

6.2.1.3.8.2--Add: "Evidence of Cheating- Course providers may suspend or revoke a LIFEGUARD'S certificate based on evidence of cheating or obtaining the certificate under false pretenses. " -- To protect the public there must be procedures to revoke to suspend certificates.

MAHC Committee Response:

Disagree. Lifeguard Training Agencies can determine conditions for suspension or revocation.

Comment:

6.2.1.3.9--Add: "Additional Training or Testing- The AHJ may, at its discretion, require additional training or testing." -- To protect the public there must be procedures to revoke to suspend certificates.

MAHC Committee Response:

Disagree. It is the Lifeguard Training Agency and/or facility operator's responsibility to require additional training/testing.

Comment:

6.3.2.1--Modify: "8.) Any aquatic venue with a total water surface area within a single enclosure that exceeds 1500 square feet.
9) Any aquatic venue that sells or serves alcohol.

10) Any aquatic venue incorporating a bulkhead, waterslide, diving board, starting blocks, climbing wall, or other similar equipment." -- Surveillance by a lifeguard or lifeguards is required as an added layer of protection and care instituted where the supervision of children by a parent or caregiver is compromised by the size and features of a facility, number of patrons present, and the types of activities undertaken.

MAHC Committee Response:

Partially agree. Have modified wording. We have focused on elements that are risk based so the 30 ft distance is justifiable as a rescue throwing device distance. We do not think that the rationale applies to surface area. Have modified wording to include climbing walls.

Comment:

6.4.2.2.4--Modify: "11. Children under 12 years must be supervised by a parent or caregiver"
12. Children under the age of 5 must have "touch supervision" with a parent or caregiver within arm's reach at all times
13. No Lifeguard on Duty" (if lifeguards are not required by code)" -- Children under 12 year must be supervised by a parent or caregiver regardless of whether lifeguards are present or not. The surveillance and emergency care provided by a lifeguard is not a substitute for the supervision of children by their parent or caregiver. Rather surveillance by a lifeguard or lifeguards is an added layer of protection and care instituted where the supervision of children by a parent or caregiver is compromised by the size and features of a facility, number of patrons present, and the types of activities undertaken. Unsupervised children face a multitude of hazards at a public swimming pool that may include not only the potential for abduction, sexual assault, and drowning but also dehydration, heat stroke, severe sunburn, and other injuries. Lifeguard certification and training programs recognizes that lifeguard surveillance is not a substitute for the direct supervision of children. For example StarGuard training indicates "Lifeguards are not baby-sitters, and they can't watch all children at all times." Also rules signs typically installed at a facility including those required within this code are written at greater than an 8th grade reading level.

MAHC Committee Response:

Disagree. The signage wording here is, as stated intent. The facility should reword as needed to convey the messages appropriately to the swimmers that facility is intended to service.

Comment:

Glossary--~~"Underwater Shelf" means a shallow area less than two feet in water depth that is primarily intended for lounging and sunbathing. -- Abrupt changes in depth created by underwater shelves are particularly dangerous to young non-swimmers and a violation of the sloping requirements relating to the bottom of the pool.~~

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--"~~Diaper-aged~~ High risk children" mean children less than 5 years of age. -- Most 4 year olds are potty trained but may still present a higher risk of RWIs and drowning.

MAHC Committee Response:

Agreed. Have deleted use of diaper-aged children and just use children under 5 years old.

Comment:

Glossary--"Bulkheads" means a movable partition that physically separates a competitive pool into multiple sections. -- Manufacturers indicate bulkheads are for use in competitive pools by trained swimmers. For example the Operations manual for the Natare Bulkhead indicates "Moving bulkheads are not intended as play structures or for use by recreational swimmers. Moving bulkheads are intended for trained individuals in carefully supervised and controlled environments" The hazards introduced by bulkheads are greater for recreational swimmers who are not trained in the use of the bulkhead.

MAHC Committee Response:

Disagree. Bulkheads can separate any pool into multiple sections.

Comment:

Glossary--"Activity pool" means a water attraction with water more than 2 ft deep designed primarily for play activity that uses constructed features and devices including pad walks, flotation devices and similar attractions. "Wading Pool" means any pool used exclusively for wading and intended for use by children where the depth does not exceed 2 feet (0.6 m). -- Some designers may try to reclassify wading pools as activity pools to avoid requirements such as those relating to barriers.

MAHC Committee Response:

Disagree. Depth is not a determining factor, rather it is the intended/nature of the use.

Comment:

Glossary--"Competitive Pool" means a pool designed and intended for use for accredited competitive aquatic events.

MAHC Committee Response:

Disagree. Have not needed to use this definition so far.

Comment:

Glossary--"Peninsula ~~/ Wing Wall~~" means a structural projection into a pool intended to provide separation within the body of water. ~~Wing walls or~~ Peninsulas shall have ~~are not considered~~ decks ~~unless they are~~ at least four feet clear in width. ~~Wing walls or~~ Peninsulas may be used for lifeguarding depending on size, location and configuration. "Wing Wall / ~~Peninsula"~~ means a structural projection into a pool intended to provide separation within the body of water. Wing walls are less than 18" in width. ~~or peninsulas are not considered deck unless they are at least four feet clear in width. Wing walls or peninsulas may be used for lifeguarding depending on size, location and configuration~~ -- Peninsulas are different than wing walls

MAHC Committee Response:

Disagree. However, the definition has been revised from the original.

(37) John Rowland, Private Citizen, Atlanta, GA
12 comments

Comment:

5.8.5.3.10--Rescue throwing devices should be available to open water facilities with one lifeguard on duty.

MAHC Committee Response:

Not clear on intent, this MAHC guidance is for public treated aquatic venues, not open water.

Comment:

5.8.5.4.2--Reaching poles should be available at facilities where there is no lifeguard on duty. These are not tools for professionals. -- REFERENCE: American Red Cross Lifeguarding Program

MAHC Committee Response:

Agreed. This section is under 5.8.5.4 for facilities without lifeguards.

Comment:

6.2.1.3.5--Change CPR certification to two year Length of valid certification shall be a maximum of two years for lifeguarding and first aid, and a maximum of two years for Cardiopulmonary Resuscitation (CPR/AED). -- REFERENCE: American Red Cross Lifeguarding Program, American Heart Association Basic Life Support

MAHC Committee Response:

Disagree. The physical presence of the instructor of record assures that students are evaluated accordingly in both cognitive and physical testing. This also significantly reduces the risk of individuals becoming certified who lack the basic skills and knowledge necessary through either acts of omission caused by the substitution of another individual to provide testing, or by student fraud.

Comment:

6.2.2.2--Recommend changing #2. The training candidate should have a valid CPR and first aid training to work but should not be required to hold this certification prior to taking the supervisor training course, nor as a part of the course. This could be problematic for course takers of an online course -- Recommend change #3 They should be taught the goals of proper surveillance and taught how to test them -- REFERENCE: American Red Cross online Lifeguard Management course

MAHC Committee Response:

Disagree. Should not be problematic for an on-line course. If the training agency does not include CPR/AED and first aid training as part of their curriculum then they would make it as a prerequisite and require submission of the certificate for verification. #3 is stated as intended.

Comment:

6.2.2.3.2--Recommend change to make it more clear that online Lifeguard Management courses are acceptable. The way this reads and the way the section flows, no mention of online until the end of the annex. -- REFERENCE: American Red Cross online Lifeguard Management course

MAHC Committee Response:

Disagree. No change necessary in this section.

Comment:

6.2.2.3.3--Recommend to clarify this is for instructors of any in-person courses. Change to say – “Lifeguard Supervisor training courses taught in person… -- REFERENCE: American Red Cross online Lifeguard Management course

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.2.2.3.3.3--Change to indicate agencies that have in-person supervisor courses. The way it’s written now, dictates all agencies to have this.

MAHC Committee Response:

Disagree. If training agency certifies lifeguard supervisor instructors then there is a need for a renewal process same as there is for lifeguarding and lifeguard instructors.

Comment:

6.3.3.1.1--Delete number 2 and change 1 to say The QUALIFIED LIFEGUARD is capable of viewing the entire area of the assigned zone and respond to a victim within 30 seconds of the start of the drowning process. -- REFERENCE: American Red Cross lifeguarding

MAHC Committee Response:

Disagree. This section addresses the time the rescuer must reach the furthest extent of the zone (20 seconds). It does not include the "recognition phase" in this time.

Comment:

6.3.3.1.1--I agree that quick response times are important for positive outcomes, but think that more is included to determine that. Do not necessarily think 20 seconds is the time. The Red Cross program says that the size and shape of zones should allow lifeguards to respond quickly, within 30 seconds, to victims in the water. The total response time for each zone is a consideration. It's great if the lifeguard can get to the farthest part but the rest of the response – extrication, resuscitation, etc, has to be quick as well. It certainly is one part of it but does not make the zone as it relates to the entire operation safe. -- REFERENCE: American Red Cross lifeguarding

MAHC Committee Response:

Partially agree. No change. This section addresses the time the rescuer must reach the furthest extent of the zone (20 seconds), which would include addressing size and shape of each zone, among other factors. It does not include the "recognition phase" in this time.

Comment:

6.3.3.3.4--Agree, except it should say 30 seconds -- REFERENCE: American Red Cross lifeguarding

MAHC Committee Response:

Disagree. This section addresses the time the rescuer must reach the furthest extent of the zone (20 seconds). It does not include the "recognition phase" in this time.

Comment:

6.3.3.4.5--Agree, except it should say 30 seconds -- REFERENCE: American Red Cross lifeguarding

MAHC Committee Response:

Disagree. This section addresses the time the rescuer must reach the furthest extent of the zone (20 seconds). It does not include the "recognition phase" in this time.

Comment:

6.3.4.3.1--Recommend change to mean that all the zones being used are staffed. Parts of pools or additional pools within the same venue may not be open during all times during any given day. For example, a leisure pool may not be open during early morning lap swim. The way this is written it implies each zone must be staffed regardless

MAHC Committee Response:

Agree. Code revised.

(38) Josh Feller, Wisconsin Parks and Rec Association, Slinger, WI
2 comments

Comment:

5.1.1.2--Having separate permits/license for each Aquatic Venue at your family section. Just charging a municipality/business more times for different amenities at one facility is a little overkill.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.2.1.2--The facility will be charged for each additional inspection after the initial annual pre-operational one. My thoughts are you should receive a total/maximum of 2 “free” inspections. One for the annual inspection and another one to prove the corrections or improvements were made after the initial inspection if things were not up to standards (a follow-up).

MAHC Committee Response:

Agree. All fee references removed from MAHC and moved to administrative guidance.

(39) Julia Martinson, Wisconsin Parks and Rec Association, New London, WI
9 comments

Comment:

5.6.9.3.1--Does this mean I can't have bleachers or chairs on deck?

MAHC Committee Response:

No, see glossary. Perimeter deck is defined as within 4 ft. of pool edge. That area must remain unobstructed for safety reasons

Comment:

5.8.5.2.2.1 & 5.8.5.2.3.1--We don't have a first aid area (besides the staff/pool office) or a designated emergency phone (aside from our everyday 2-line phone) – nor, thus, have signs designating those. Is it unreasonable? Probably not.

MAHC Committee Response:

No change suggested. The MAHC believes that it is safest to designate a space and label it so people can find it. A reliable source of communication is critical as described in annex as well.

Comment:

5.8.5.2.3.2 & 5.8.5.2.3.3--We don't have facility hours or the emergency contact information of the management posted on a permanent sign. Is it necessary? Perhaps – I just had an incident this spring where a rental was scheduled and no staff showed up for it. The family had no one to call. This would have alleviated that incident.

MAHC Committee Response:

No change proposed by commenter. In response to the question, yes, posting the emergency contact information for the management is required.

Comment:

5.8.5.4.5--This section is confusing – especially #2. The header indicates conditions when a lifeguard is required, the first line indicates signage for when a lifeguard is not on duty, but #2 indicates that a lifeguard is required. #1 sounds like a hotel rule but not something that would apply at a municipal pool.

MAHC Committee Response:

Agreed. Heading altered. This section is for facilities without lifeguards.

Comment:

6.2.1.3.5--CPR/AED re-certification is advised on a yearly basis. As you know, ARC just upped their expiration date to 2 years and its so much nicer to have the certification expire at the same time (in our opinion). I would rather see the code agreeing with the certification-granting agency. An additional requirement of CPR/AED refresher training to be held annually during In-Service or Pre-Service training also seems reasonable.

MAHC Committee Response:

Disagree. Because of the stated degradation in skill, the MAHC prefers to go with current requirement. This does not change anything to do with the CPR course. You just have to certify each year rather than every two years.

Comment:

6.3.2--I'm curious about this as we only have a guard on deck if there is a patron in the water. So a revision would read – while the AQUATIC VENUE is open and in use.

MAHC Committee Response:

Agree. If a facility or venue is open then it must have someone on deck or be closed. There are big safety issues if someone gets in and no one is on duty.

Comment:

6.3.3--They have all these requirements for the safety team – but there's nothing to designate there must be a safety team

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.3.1.4--I believe they have a typo: Lifeguards must be supervised according to MAHC 6.3.3. – I think this should read MAHC 6.3.1.2.5.

MAHC Committee Response:

Disagree. The section is correct. The intent is to meet the requirements of the safety plan.

Comment:

6.4.2.2.4.3--We don't have CPR and RWI posters up 24/7. There will be a cost to adding those but it is certainly not going to hurt anything.

MAHC Committee Response:

No change suggested. See changes to wording.

(40) Julie Boland, NRPA, Ashburn, VA
1 comment

Comment:

5.7.3.1.3.1.2--Aquatic Venues
The cyanuric acid levels at all AQUATICS VENUES shall remain at or below 50ppm (mg/l) -- Jennifer Murphy, Ph.D with the Center for Disease Control in Atlanta recent experiments on chlorine efficacy with cyanuric acid as presented at the latest WAHC and soon to be published in peer reviewed publication. Contact Jennifer at CDC for details. lod7@cdc.gov

MAHC Committee Response:

Disagree. Until such data are peer-reviewed and published and available the MAHC cannot consider altering guidance.

(41) Justin Loehr, Schlitterbahn, New Braunfels, TX
2 comment

Comment:

5.4.1.2.1--should there be an allotted amount of time that must pass before evacuating the pool rather than evacuating it immediately for a very brief power outage?

MAHC Committee Response:

Agreed. New wording should clarify choices.

Comment:

5.8.5.3.3--Allow a variance on requiring rescue tubes to be readily available at all positions under 3 feet of water for those positions that a rescue tube is not necessary – end of speed slide for instance

MAHC Committee Response:

Disagree. The Annex provides rationale for the 3 foot depth criteria.

(42) Kari Hemund, Headquarters Marine Corps, Quantico, VA
27 comments

Comment:

4.1.2.3.5--ADD: or calculated by local fire department or regulatory agency

MAHC Committee Response:

Disagree. Note: Current Code language listed is not consistent with code section cited. The use of bather load for MAHC requirements (see definition section) is different than local fire department's purpose, which is typically for exit capacity calculations.

Comment:

4.5.11.1--Conform to ADA Standards
Suggest: Add- "or the standards adopted by Regulating Federal Government agency"

MAHC Committee Response:

Disagree. ADA is currently the standard.

Comment:

4.5.6.7 TABLE--Stair Hand Rail Dimensions
Suggest- Identify/define: T-1 and H-1 located in the first row of the table

MAHC Committee Response:

Agree. They are identified/defined in the corresponding Figure 4.5.7.7.1.

Comment:

4.5.8.5 TABLE--Recessed Step Dimensions
Suggest: identify H-1, W-1, D-1 located in the first row of the table

MAHC Committee Response:

Agree. They are identified in the corresponding Figures 4.5.7.5.1 and 4.5.7.5.2.

Comment:

4.8.4--Deck Slides
Suggest: Provide information related to the maintenance, operation and safety of slides. OR add section that this information is addressed or remove section and renumber

MAHC Committee Response:

Disagree. Choose to keep for future language to be added.

Comment:

4.8.5.1.2 --First Aid Equipment
Suggest: Provide information related to the maintenance, operation and safety of slides. OR add section that this information is addressed or remove section and renumber.

MAHC Committee Response:

Deleted section.

Comment:

4.8.5.1.3--Signage
Suggest: Provide information related to the maintenance, operation and safety of slides. OR add section that this information is addressed or remove section and renumber.

MAHC Committee Response:

Agreed. Deleted.

Comment:

6.2.1.3.5 --Number of Years
Current: CPR/AED max number of 1 year
Suggest: Max number 2 years (this is what ARC is currently doing)

MAHC Committee Response:

Disagree. Because of the stated degradation in skill, the MAHC prefers to go with current requirement. This does not change anything to do with the CPR course. You just have to certify each year rather than every two years.

Comment:

6.3.3.3--Recommend: Do not use Active duty to describe performing lifeguard duties

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.3.3.3

Qualified Lifeguard Emergency Action Plan Training
Current: 3 parts to EAP, not including what to do in an emergency
Suggest: ADD- rescue procedures (minor and major incidents, medical, trauma, water rescues and land emergencies) and crisis management procedures

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.3.3.4 --Qualified Lifeguard Skills Proficiency
Current: (1-5) #2 Ability to identify all zones of PATRON surveillance responsibility to which

they
could be assigned
Question: is this section for pre skills check?, if so then the person would not know zones.
Suggest: clarify when these skills are to be checked and how often? For what purpose

MAHC Committee Response:

Disagree. No change needed. The following Annex information provides an explanation:
6.3.3.3.4 Qualified Lifeguard Skills Proficiency LG
It is imperative that all lifeguards hired are currently able to perform effectively in the workplace. AQUATIC FACILITIES need to assess the lifeguard's ability to perform the job skills necessary to be a QUALIFIED LIFEGUARD at the AQUATIC FACILITY including at any AQUATIC VENUES within the AQUATIC FACILITY where the lifeguard may be assigned before allowing the lifeguard to be on duty.
When first hired, lifeguarding skills should be assessed during pre-service training prior to the first duty assignment. In-service training should assess skills on a regular basis to determine ability for ongoing duty assignments. Training agencies require that employees have training, knowledge and the proper equipment to protect the employee and the PATRON against disease transmission. This level of awareness must be in place before active PATRON surveillance takes place.

Comment:

6.3.3.3.6.1 --Lifeguard Certificate - Uses the word "active duty"
Suggest: Change "active duty" to "providing LIFEGUARD Duties"

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.3.5 to 6.3.3.5.2 --Safety Plan on File
Current: sections are out of place here
Suggest: Move up to 6.3.2

MAHC Committee Response:

Disagree. This section follows all of the sub-sections that are outlined in Safety Plan Topic Heading. It is in the correct location.

Comment:

6.3.4.3.4 --Direct Surveillance
Current: Using direct and patron surveillance
Suggest: pick one word for clarity and consistency. Do not interchange "direct and Patron surveillance"

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.4.4.2--Current: A QUALIFIED LIFEGUARD cannot be on duty with scanning responsibilities if they are acting as the LIFEGUARD SUPERVISOR.
Suggest: Reword- Lifeguard supervisor may perform lifeguard duties when patron load allows for dual duties

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.3.4.5.8 --Communication Plan
Current: “community 911”
Suggest: Change 911 to “community EMS”

MAHC Committee Response:

Agreed; added.

Comment:

6.4.1.1.2--Operation Manual
Current: Operation and maintenance policies and instructions, including fecal/vomit and body fluid contamination response protocols, for each AQUATIC VENUE and AQUATIC FEATURE at the facility
Suggest: body fluid contamination is addressed in other sections, Remove from this section

MAHC Committee Response:

Disagree. Although mentioned elsewhere, the MAHC wants these protocols aggregated in the manual.

Comment:

6.4.1.2.7--Staff Certifications on File
Current: keeping of certifications is address in sections: 6.3.3.4.4, 6.3.3.3.5
Suggest: remove one of the sections. For clarity

MAHC Committee Response:

Disagree. Different items being specified. This covers operator or guard certificates. Other sections cover up to date training requirements (in-service, etc.).

Comment:

6.4.1.2.8.2--SOP
Current: the same topics addressed in EAP, SOP, safety plan, operation plans, emergency response plan
Suggest: have topics different in each plan or manual or do not have so many plans and manual names

MAHC Committee Response:

Agreed. Not intended to say they are all separate. Wording edited.

Comment:

6.4.2.1--Current: addressed in section 4.1.2.3.5.1 Suggest: Combine sections

MAHC Committee Response:

Disagree. The section in Chapter 4 is a design section and may not apply to older facilities.

Comment:

6.4.2.2.4--Signage messages
Current: In case of an emergency dial 911
Suggest: ADD: or local emergency number

MAHC Committee Response:

Agreed. Wording edited and exception pointed out.

Comment:

6.6.6 --Enforcement Penalties
Question: If this code is not law, how are there enforcement penalties? Who is the enforcing agency
Suggest: REMOVE section

MAHC Committee Response:

Disagree. This is code wording written to be adopted so it would be enforceable upon adoption. Needs to be written as if the AHJ is writing it.

Comment:

6.6.8--Fees
Suggest: ADD: when fees are required

MAHC Committee Response:

Partially agree. Have deleted all references to fees. Leave this to AHJ.

Comment:

Glossary--Current - Pool Deck is defined under "Deck" and again as a stand-alone term.
Suggest- Remove as a stand-alone term

MAHC Committee Response:

Agreed. Consolidated.

Comment:

Glossary--Current - Aquatic Facility or Venue Enclosure, The term Aquatic Facility has been given two different definitions.
Suggest – remove Aquatic Facility, the word is previously defined and could lead to confusion.

MAHC Committee Response:

Disagree. Definition still the same but have clarified that enclosure can be for either a facility or venue or both.

Comment:

Glossary--Current - Indoor Aquatic Facility and
Aquatic Facility, the definitions are closely written.
Suggest – specific Outdoor Aquatics Facility and remove Aquatic Facility term. Or keep aquatic facility term and remove Indoor and just specify in the document indoor or outdoor.

MAHC Committee Response:

Disagree. Multiple issues come up with indoor aquatic facilities that require a new definition to be used.

Comment:

no section provided--Filter rooms, equipment, emergency shut off valve. Signage and accessible, unblocked

MAHC Committee Response:

Not clear what change is intended.

(43) Kevin Blumberg, Schlitterbahn, Galveston, TX
4 comments

Comment:

5.6.1.1.4--Cracked lenses that are physically intact on lights shall be replaced before the Aquatic Venue attraction reopens to bathers.

MAHC Committee Response:

Disagree. Aquatic venue defined; no need to add "attraction".

Comment:

5.6.1.1.5--The Aquatic Venue attraction shall be immediately closed if cracked lenses are not intact and the lenses shall be replaced before re-opening.

MAHC Committee Response:

Disagree. Aquatic venue defined; no need to add "attraction".

Comment:

5.6.1.2--Numbering system is off:
5.6.1.2.1 Assessments
5.6.1.2.2 Reduction
5.6.1.2.3 Good Condition
5.6.1.2.4 Light Levels

MAHC Committee Response:

Agreed. Edited.

Comment:

5.6.1.2.2--Windows and lighting equipment shall be adjusted if possible to minimize glare and excessive reflection on the water surface.

MAHC Committee Response:

Agreed, edited.

(44) Kevin Boyer, Aquasol Controllers, Inc, Houston, TX
5 comments

Comment:

4.7.3.2.1.3--All chemical feeders shall be provided with an automatic means to be disabled through
an electrical interlock with at least two of the following:
1) Recirculation Pump Power,

2) Flow Meter/Flow switch/Safety Pressure Switch in the return line,
3) Chemical Control Power and Paddle Wheel or Flow Cell on the chemical controller IF safety test confirms feed systems disabled through controller when pump turned off, loses prime, or filters are backwashed.. -- The Safety Pressure Switch is the most common return line safety device used today for chemical feeders and heaters. They are less prone to clogging and malfunction than other methods and provide better protection than sensors mounted in bypass or Flow Cell assemblies.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.2.3.1--~~The injection point of disinfection chemicals shall be located before any pH control chemical injection point with sufficient physical separation of the injection points to reduce the likelihood of mixing of these chemicals in the piping during periods of interruption of recirculation system flow.~~ --This entire statement should be deleted unless significantly more detail is included and supported. There is no practical way to tell how much separation would be required in each piping arrangement to prevent mixing when the pipe has no water. How much is sufficient? 1 foot, 10 feet? Does size of pipe make a difference? Angle of the pipe? TDH? There is also no evidence or study that suggests having disinfection injected prior to acid will prevent mixtures in a non-flowing line. Proper No or Low Flow deactivation as in 4.7.3.2.1.3 is the only way to achieve this.

MAHC Committee Response:

Partially agree. However no change. Although specific separation and other noted details aren't specified, a physical separation between injection points may help in reducing the likelihood of mixing of the chemicals. Given the seriousness of the problem and the number of incidents, the potential benefits in the absence of specified negative impacts, other than absence of details, support leaving the code unchanged.

Comment:

4.7.3.2.5.1.1--Feed rates shall be controlled using chemical controllers. -- ANSI/NSF 50 since 2011 allows for the use of fixed rate chemical pumps when used with an NSF approved controller. Section 9.

MAHC Committee Response:

No change needed. Chemical controllers monitor the chemical/disinfectant level and turn on/off the chemical feeders as needed to maintain the set-point for the disinfectant and pH levels. The rate of feed is set at the chemical feeder.

Comment:

5.7.3.5.6.1--All chemical tubing shall be routed in PVC piping where operating staff walk to support the tubing and to prevent leaks. -- Good practice for walkways where tubing might be a trip hazard or abraded but in other places just leads to bigger hidden pooling area before the leak is discovered.

MAHC Committee Response:

No change proposed by commenter. The requirement as written only applies to those areas where staff walk.

Comment:

5.7.3.7.5--Only manufacturer-approved OEM replacement parts or equivalent specification shall be used. -- This should be the domain of an equipment certification agency not MAHC. As a manufacturer we feel obligated to state that we are comfortable with OEM equivalent replacement parts. To say otherwise would be purely for economic gain.

MAHC Committee Response:

No change proposed by commenter. Disagree with comment that this should not be in the domain of the MAHC. The MAHC provides requirements/expectations to a facility owner/operator. As such, this section provides information to the facility owner/operator that only parts acceptable to the manufacturer may be used.

(45) Lars Hagen, AquaCal AutoPilot, Inc., St. Petersburg, FL
2 comments

Comment:

4.7.3.2.2.2--INCOMPLETE COMMENT: SEE ADDITIONAL DOCUMENT
4.7.3.2.2.2 All CHLORINE dosing and generating equipment including erosion feeders, or in line electrolytic and brine/batch generators, shall be designed with the capacity per the standard model, including safety factors.
4.7.3.2.2.2.1 The sizing for a chlorine generator in pounds per day should be determined by calculating the expected chlorine demand for the pool.

MAHC Committee Response:

Disagree. Chlorine dosage requirements were revised based on public comment submitted in response to the individual module public comment period. A significant change such as this needs additional stakeholder input. A workgroup should be established by the CMAHC to address this issue (chlorine dosage requirements) and bring recommendations for a code change to the 2015 CMAHC conference.

Comment:

4.7.3.2.6.6--4.7.3.2.6.6. (Remove all text in this section) -- Editorial:
Remove section 4.7.3.2.6.6.
1) This section is repetitive. MAHC sections 4.7.3.2.2.2 and 4.7.3.2.2.3 already address dosage requirements for the disinfection equipment.
2) This section prevents the use of smaller, more economical, electrolytic generators that do not meet the 100% dosage/sizing requirements, which could be used in conjunction with a chemical feeder that does meet the 100% dosage/sizing requirement. (It is common for smaller electrolytic generators that meet 200% or more of the actual maximum peak daily chlorine demand to be installed on pools in cases where the local code requires a much higher dosage rate than the actual maximum peak daily chlorine demand for the pool. A chemical feeder is used in conjunction with the electrolytic generator to provide the extra capacity required to meet the statutory code dosage rate.)
3) Section 4.7.3.2.2.1 already protects the bather by requiring a minimum disinfection level at all times.

MAHC Committee Response:

Partially agree. Section deleted, not needed as all chlorine dosing and generating equipment is already addressed in Section 4.7.3.2.2.2. Disagree with comment 3) Section 4.7.3.2.2.1 already protects the bather by requiring a minimum disinfection level at all times. Section 4.7.3.2.2.1 addresses feeder sizing and states "Feeders shall be capable of supplying disinfectant and pH control chemicals to the AQUATIC VENUE to maintain the minimum required DISINFECTION levels at all times in accordance with the MAHC."

(46) Laurie Olson, Wisconsin Parks and Rec Association, Neenah, WI
1 comment

Comment:

General--OSHA adopted and incorporated the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals into its already existing Hazard Communication Standard. Safety Data Sheets (SDSs) are replacing Material Safety Data Sheets or MSDSs. They should be using these updates.

MAHC Committee Response:

Agree. MSDS changed to SDS throughout.

(47) Lynn Loubert, City of London, London, Ontario
6 comments

Comment:

4.8.5.2.3--Dependent on length of time in the sun and length of supervision shifts

MAHC Committee Response:

Disagree. This is basic worker safety.

Comment:

5.8.5.3.3--Depth of pool should be 4 feet 6 inches, many facilities are shallow but deeper than 3 feet, and wouldn't require a tube as a rescue devise

MAHC Committee Response:

Disagree. The Annex provides rationale for the 3 foot depth criteria.

Comment:

5.8.5.3.4--Depth of pool should be 4 feet 6 inches, many facilities are shallow but deeper than 3 feet, and wouldn't require a tube as a rescue devise.

MAHC Committee Response:

Disagree. The Annex provides rationale for the 3 foot depth criteria.

Comment:

5.8.5.3.8--Should wear polarized glasses vs shall

MAHC Committee Response:

Disagree. The Annex provides rationale for the requirement to wear polarized sunglasses. Guards cannot see the bottom unless they wear them.

Comment:

6.2.2.1--Ability to communicate in English- this is discriminatory, and not appropriate. Many locations have staff and clients that speak in another language or sign language.

MAHC Committee Response:

Disagree. The Annex provides rationale for this requirement.

Comment:

6.3.1--I agree there should be a responsible person with in arms reach. My concern is the height requirement. I am 5 feet tall and according to this could not be the responsible person. I agree with 14, but not he height. This would be dependent on the water depth, swimming ability etc of the facility and participant. It also needs to be easy to understand. This is not.

MAHC Committee Response:

Disagree. It appears that the comment correlates with Section 6.3.2.1 not 6.3.1. This section(6.3.2.1) does not address the height of the "responsible person" , it addresses the depth of water in the venue.

(48) Marc-Andre Bernier, Vortex USA, Flower Mound, TX
2 comments

Comment:

4.7.3.3.2.2--For pools, the SECONDARY DISINFECTION SYSTEM shall be located in the treatment loop (post filtration) and treat a portion (up to 100%) of the recirculation flow prior to return of the water to the AQUATIC VENUE or AQUATIC FEATURE. For interactive water play avenue, the SECONDARY DISINFECTION SYSTEM shall be located in the interactive water play avenue loop prior to sending the water to the AQUATIC VENUE or AQUATIC FEATURE. -- Current pool codes require secondary disinfection system before water gets to kids. On interactive water attraction, there may be no filters on the interactive water attraction loop.

MAHC Committee Response:

Disagree. The secondary disinfection system must be installed on the filtration system loop. The filtration system operates continuously, which is necessary to achieve the intended reduction of Cryptosporidium in the treatment tank in the specified time period. Installation on the aquatic feature loop will not assure intended treatment outcome, especially since the feature pumps do not typically operate continuously (24 hours) a day (are shut off at night).

Comment:

5.7.2.1.1--High-rate granular media filters shall be operated at no more than 20 gpm/ft^2 (m/h) or as per manufacturer's design when a minimum bed depth of 15 inches (38 cm) is provided by manufacturer. -- Most commercial high-rate granular media filters are designed for a maximum of 20 gpm/ft2

MAHC Committee Response:

Disagree. MAHC intent is to slow down filtration rates so they are more efficient. Despite manufacturers rec's they are much less efficient at this rate. See annex for discussion.

(49) Marty Easter, Tri-County Health Dept., Greenwook Village, CO
14 comments

Comment:

4.1.1.3--The MAHC does not provide a timeline of when plans should be submitted; e.g. 30 days prior to the construction, extension, enlarging, remodeling or modification of a public swimming area or related facilities. -- Colorado Pool and Spa Regulations

MAHC Committee Response:

No change proposed by commenter. In response to question regarding time frame for plan submittal, the time necessary for review by the AHJ is variable. Guidance for administration of a model aquatic regulatory program is under development and will be released as a separate document.

Comment:

4.10.1.5.1--There is an incorrect reference to section 4.6.2.1.7; this section does not exist in the current MAHC.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.4.5.7--Should this refer to a disinfectant instead of a sanitizer. I do not believe there is an EPA approved sanitizer for diaper changing tables as it requires disinfection, which is different than sanitizing; sanitizers should not be used on surfaces that have been contaminated with bodily secretions or excretions and disinfectants should be used on hard surfaces to DESTROY infections bacteria and fungi - typically "Hospital-grade" disinfectants are approved by the EPA to be used on surfaces that are known to be or commonly contaminated with bodily secretions and excretions.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.11.6.2--Does 4.11.6.2 comply with the Clean Water Act? There may be a need to include a statement considering local storm water ordinances

MAHC Committee Response:

Disagree. No change necessary, the code includes a statement regarding unlawful pollution of public waters.

Comment:

4.12.1.11--Should section 4.12.1.11 be applied to other aquatic venues as well in the case of accidental suction entrapment/entanglement? -- Colorado Pool and Spa Regulations- Section 3.17

MAHC Committee Response:

Disagree. Commenter did not provide data to support proposed changes.

Comment:

4.5.5.4--Should this say, "…have a minimum uniform VERTICAL tread depth…"?

MAHC Committee Response:

Disagree. "Vertical" would mean riser. Current language is correct.

Comment:

4.8.1.3.2--The placement of DECK drains, where provided, shall be located so that the deck drain will not service more than 400 square feet of deck area and effectively carry water away from the AQUATIC VENUE and off of the DECK without ponding. -- Colorado Pool and Spa Regulations

MAHC Committee Response:

Disagree. The code uses performance based criteria instead of prescriptive requirements where possible.

Comment:

4.8.1.4.5.1--A period is missing at the end of this section wording.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.8.1.5.1.3--Please define Unguarded pool. Does this mean no life guard?

MAHC Committee Response:

No change proposed by commenter. In response to the question, Section 6.3.2.1 defines aquatic facilities where lifeguards are required. Unguarded pools are those not requiring lifeguards per section 6.3.2.1.

Comment:

4.8.2.1.1--Should the Wording state: *Conforms- Competitive Diving*

MAHC Committee Response:

Agree

Comment:

4.8.4--Deck Slide- See Glossary- Water Slide

MAHC Committee Response:

Disagree. Choose to keep for future language to be added.

Comment:

4.9.2.3.2--There is an incorrect reference to section 4.8.5.2.3

MAHC Committee Response:

Agree. Now refers to MAHC 4.8.6.2.3.

Comment:

4.9.2.6.2.1.1--There is an orphan period as well as an incomplete sentence; the statement ends with, "…or combustion air and"

MAHC Committee Response:

Agree

Comment:

5.7.5--We believe that all chemical testing shall conform to at minimum the guidance of the Colorado Regulations. -- Colorado Pool and Spa Regulations- Section 4.7

MAHC Committee Response:

Disagree. Not sure what CO requires but we think this is needed at the current time.

(50) Mary Ostrowski, American Chemistry Council, Washington, D.C.
3 comments

Comment:

Glossary--"Available Chlorine" means the amount of chlorine in the +1 oxidation state, which is the reactive, oxidized form. In contrast, chloride ion (Cl–) is in the -1 oxidation state, which is the inert, reduced state. Available Chlorine is subdivided into Free Available Chlorine and Combined Available Chlorine. Pool chemicals containing Available Chlorine are both oxidizers

and disinfectants. Elemental chlorine (Cl2) is defined as containing 100% available chlorine. The concentration of Available Chlorine in water is normally reported as mg/L (ppm) “as Cl2”, that is, the concentration is measured on a Cl2 basis, regardless of the source of the Available Chlorine. -- REFERENCE: White, G.C., 1999, Handbook of Chlorination and Alternative Disinfectants, 4th Edition, pp. 221-222

MAHC Committee Response:

Agree. Definition for "available chlorine" added.

Comment:

Glossary--“Free Chlorine Residual” OR “Free Available Chlorine” means the ~~available disinfectant in the water. It is the~~ portion of the total available chlorine that is not “combined chlorine” and is present as hypochlorous acid (HOCl) or hypochlorite ion (OCl-). ~~available as disinfectant. When chlorine is added to water, hypochlorous acid is produced in either the molecular state (HOCl) or the ionized state (hypochlorite ion (OCl-) plus hydrogen ion (H+)), and a by-product specific to the type of chlorine is produced.~~ The pH of the water determines the ~~amount~~ relative amounts of hypochlorous acid and hypochlorite ion ~~in each state~~. HOCl is a very effective bactericide and is the active ~~available chlorine disinfectant~~ bactericide in pool~~the~~ water. OCl- is also a bactericide, but acts more slowly than HOCl. Thus, chlorine is a more ~~a much less~~ effective bactericide at low pH than at high pH. ~~The sum of HOCl and OCl- is referred to as “free chlorine” in pool water. The hypochlorous acid that remains in pool water uncombined with ammonia is called “free chlorine residual.”~~ A ~~F~~free chlorine residual must be maintained for adequate disinfection. -- The original definition for Free Available Chlorine is confusing, somewhat inaccurate, and too long for a definition. The suggested changes improve the clarity and accuracy of the definition. Parts of the text were deleted since they were repetitive or contain more information than required for a definition.

The definitions should also include a separate definition for “Available Chlorine”, which is all of the chlorine in the +1 oxidation state. The term “available” has nothing to do with whether the chlorine is free or not, rather this term refers to the +1 oxidation state. -- REFERENCE: White, G.C., 1999, Handbook of Chlorination and Alternative Disinfectants, 4th Edition, pp. 221-222

MAHC Committee Response:

Agree. Definition revised.

Comment:

Glossary--“Chlorine” means a naturally occurring chemical element that at room temperature and pressure is a heavy greenish yellow gas with a characteristic penetrating and irritating odor; ~~and~~it is extremely toxic. It can be compressed in liquid form and stored in heavy steel tanks. When dissolved in water, ~~C~~chlorine (gas) and other chlorine-based disinfectants (which may be applied as liquid or solid chlorine-containing compounds) release hypochlorous acid, the primary chlorine-based disinfecting agent, and hypochlorite ion ~~when dissolved in water~~. Chlorine is a general term used in the MAHC which, when discussing its presence in water,

refers to hypochlorous acid and hypochlorite ion ~~in an aqueous solution~~. -- REFERENCE: The Chlorine Manual, 6th Edition, 2000, The Chlorine Institute, Inc., page 43

White, G.C., 1999, Handbook of Chlorination and Alternative Disinfectants, 4th Edition, pp. 213-217

MAHC Committee Response:

Agreed, edited.

(51) Melon Dash, Miracle Swimming, Sarasota, FL
3 comments

Comment:

6.2.1.1.2--#2 should include: "Including ability to track a patron's presence: the location of his/her spirit relative to his body" -- Basis for Change for suggestion above: the fundamental distress signal is energetic first, physical second. More drownings can be avoided by detection of distressed energy: first a person in trouble speeds up his actions for a few seconds: as long as he can manage. Then he goes still.
Lifeguards should watch for both stages. Stillness is an emergency. This appears to happen a minute or so before drowning.

MAHC Committee Response:

Disagree. This section is an outline for course content, not details of instructional content.

Comment:

6.2.1.1.2--Also under #2: Lifeguards should not ask swimming students who are face down and remaining still as they practice a front float to refrain from practicing a front float. Students need to learn what happens to their bodies in the water when they are still. -- Basis for Change: while teaching afraid adults to swim, on several occasions lifeguards have gotten off their chairs to come tell students they couldn't be still as they learned to front float because they appeared to be dead. This has happened in more than one part of the U.S.

MAHC Committee Response:

Disagree. This section is an outline for course content, not details of instructional content. Additionally, there is an increased emphasis on discouraging breath holding activities because of the risk of drowning so guidance to the contrary is not prudent.

Comment:

6.3.3.1.1--#6 One or two lifeguard stations should be below the deck using under water windows. Windows should be large enough to view whole pool. Below-deck guards should

have instant communication capabilities to guards on deck in every zone. A more effective lifeguarding system may be below-deck lifeguards who detect distress and on-deck lifeguard/runners who perform rescues. Safety first. "What is right cannot be impossible." -- Basis for Change: surveillance from above the water provides far less safety information than that below the surface. Below the surface we can see energy and presence. We know we can't see well from above when there is glare, etc. We also cannot see tension well from above the surface but it can be easily detected under water. Much about drowning behavior and safety practices can be learned from watching under water. Sometimes the water looks quite clear from above the surface, but below the surface, it is obviously milky. What does this mean, chemistry-wise? It is unsafe? Below-deck guards will immediately know if water chemistry is off by milkiness of water. They will be unable to guard effectively or, they can at least report a water imbalance, which may also be detectable with testing.

MAHC Committee Response:

Disagree. This section addresses operational requirements, whether new or existing facilities. Implementing the proposed change would require development of design standards and reconstruction of pools.

(52) Mike Brown, Herschend Family Entertainment, Pigeon Forge, TN
6 comments

Comment:

5.7.3.1.1.3--The current writing leaves to question if this is referring to the ride line or water line. -- Need clarification if 'line' refers to ride line or water line.

MAHC Committee Response:

Agreed. Changed wording to recirculated line and expanded to all aquatic features.

Comment:

5.7.4.1--The QUALIFIED OPERATOR shall acquire a water sample for testing from the in-line sample port when available? Why not test where the people are at in the pool?

MAHC Committee Response:

Agree. We do. The sample port should give a well-mixed average water sample but the MAHC also requires bulk water sampling to ensure the sampling results match up.

Comment:

5.7.4.3.4--Sampling locations shall rotate around the shallow end of the pool. What is the ultimate goal? If the goal is to test for filtration then we would agree. If the goal is to test to see

if your levels are dropping throughout the day then we recommend controlling as many variables as possible and test from the same location.

MAHC Committee Response:

Disagree. The goal is to make sure that one is picking up issues with poor mixing so that one does not just test in an area with higher chlorine residual. This can point to issues with recirculation that need to be addressed.

Comment:

6.5.2.3--Would recommend that that the committee provides different times based off fluctuations of temperature.

MAHC Committee Response:

No change requested but agree that more data could be used to make this protocol more flexible. The data collection for multiple pathogens at a variety of temperatures and pHs would be helpful but highly costly and work intensive.

Comment:

Glossary--"Aquatic Facility" means a physical place that contains one or more aquatic venues and support infrastructure *primarily intended for bathers.* -- The definition of an aquatic facility and aquatic venue leave the AHJ with the latitude to enforce in locations not intended. For example, theme parks may have 'aquatic venues' but were not intended to be covered under this code.

MAHC Committee Response:

Disagree. Any aquatic venue is meant to be regulated under the MAHC.

Comment:

Glossary--Substantial Alteration definition refers to 'Aquatic Venue', but it is also referenced in 4.1.1.3 in regards to 'Aquatic Facility'. Does the 50% standard still hold true? -- Need clarification on the definition of Substantial Alteration and requirements of 4.1.1.3

MAHC Committee Response:

Yes. The MAHC thinks the definition is clear.

(53) Paul Hansen, Univ of San Francisco, San Francisco, CA
1 comment

Comment:

5.7.4.3.3.2--Let me start by saying my name is Paul Hansen, I work for the University of San Francisco as a Stationary Engineer .One of my jobs is to maintain the largest indoor pool in northern California at 888,000 gallons. The Issue: For a long time now I have maintained my pool with a 0.4 to 0.6 chloramine level even after annual pool shock. I began to search why I could not get below a 0.4 combined chlorine level.
Findings: My findings are as follows, on average with a pool our size we make up approx. 5,500 gallons a day in water loss due to swimmers and constant blow downs to reduce Total Dissolved Solids thus bringing in City water for makeup. I tested San Francisco City water. City water when I tested it had a 0.2 chlorine level and an amazing level of 2.2 ppm chloramines!. To check this I had the San Francisco Health Inspector watch me test it in front of him to confirm. In addition I had our science department chemists' tested 6 sites in a 12 block area which confirmed our drinking water from the city come to us at an average of 2.26ppm chloramines .My next step was to contact the San Francisco Public Utilities Commission. I spoke with their inspector and then to their lead water chemist, he confirmed me reading of 2.26 ppm chloramines in city water and advised me this level was in range and our water at any given time can be from a 0.5 to 3.3ppm chloramine level for sanitation. I then asked the same question I am going to ask you," if above 0.4 chloramines is a health hazard for swimmers how can it be we are able to ingest or in some cases inhale city water vapors (for the use of breathing aids such as nebulizers and oxygen concentrators) or drink water that has a chloramine levels four to five times what you're asking our pool level to be?.
Conclusion: For the reasons listed above I would not be able to keep the University of San Francisco's Koret pool at or below a 0.4 chloramine level when I am using San Francisco treated city water which has a chloramine level of .5 to 3.3 ppm (tested at 2.26 and last year's average which is posted in the SFPUC annual report of 2.2ppm average. I ask you remove or revise chloramine level requirements under section 5.7.4.3.3.1 due to the conflicting information of safety levels and the challenge of trying to figure a way to comply with this new section if passed.
Thank you in advance,
Paul Hansen
University of San Francisco

MAHC Committee Response:

Agree. Code revised to make 0.4 ppm combined chlorine an action level instead of an absolute maximum limit.

(54) Richard Cacioppo, Center for Public and Lodging Pool Study, East Brunswick, NJ
1 comment

Comment:

4.7.2 to 4.7.3--A vacuum-cleaning system shall be provided. When an integral part of the recirculation system, sufficient connections shall be located in the walls of the swimming pool, at least eight inches below the water line. *
The operator of every pool and spa shall have available and use on a regular basis an electric

robotic vacuum cleaner with an onboard filter bag compliant with the standards and certified by the NSF with an effective pore size to filter 50% of all Cryptosporidium oocysts with every passing.
The operator of every pool and spa shall have available and use on a regular a handheld, power-drive vacuum cleaner compliant with the standards and certified by the NSF. capable of attaching a standard pool pole with an onboard micro filter bag with an effective pore size to filter 50% of all Cryptosporidium oocysts with every passing. -- REFERENCE: American Public Health Association "Report of the Committee on Bathing Place" 1926 et. Seq.

MAHC Committee Response:

Disagree. Pool cleaning systems are addressed in Section 4.8.7. Integral vacuum systems are prohibited. The Operation and Maintenance Section 5.6.10.6 contains performance criteria relative to cleaning.

(55) Richard Falk, Private Citizen, San Rafael, CA
12 comments

Comment:

4.7.3.2.2.2 --1) Outdoor AQUATIC VENUES (unstabilized): 4.0 lbs of FAC/day/10,000 gals. of POOL water (2.0 ppm FC per hour);
2) Indoor AQUATIC VENUES: 2.5 lbs FAC/day/10,000 gals. of POOL water (1.25 ppm FC per hour).
-- The short additional text clarifies the dosage in a scale most people understand. If you prefer to put this into the Annex instead, that would be fine.

MAHC Committee Response:

Disagree. Pounds per day is the more universally recognized unit of measure when sizing this equipment.

Comment:

4.7.3.3.2.1, 4.7.3.3.2 3-log 1-log Inactivation Per Pass and Oocyst Reduction, 4.7.3.3.2.1 3-log 1-log Inactivation Per Pass--SECONDARY DISINFECTION SYSTEMS shall be designed to achieve a minimum 3-log (99.9%) 1-log (90%) reduction in the number of infective Cryptosporidium parvum OOCYSTS per pass through the SECONDARY DISINFECTION SYSTEM. -- The current 3-log per pass standard is overkill and demonstrates bias towards ozone and UV systems. The overall rate of reduction in Cryptosporidium is mostly a function of turnover rate, not the reduction rate per pass. Requiring 2-log (99%) per pass would have a negligible difference in the flow rate requirement for the same level of overall Crypto reduction requiring only 0.9% higher flow rate. In fact, even a 1-log (90%) reduction per pass would only need 11% higher flow rate and this would give filtration systems with coagulation assistance a very good chance of meeting this standard and should be considered as an option.

MAHC Committee Response:

Partially agree. It is acknowledged that a secondary disinfection system with a validated performance of 1 or 2 log reduction per pass at a corresponding higher flow rate can meet the overall treatment goals for a pool. In order for filtration systems with coagulation assistance, or any other potential secondary disinfection systems, to meet code requirements, the systems' performance for Cryptosporidium removal must be 3rd party validated.

Comment:

4.7.3.3.2.5 --Accounting for a 3-log (99.9%) When using a system with a 2 log (99%) or greater reduction of infective Cryptosporidium OOCYST through the SECONDARY DISINFECTION SYSTEM with each pass, the SECONDARY DISINFECTION SYSTEM flow rate (Q) shall be:

Q = V x ((14.8 – ln (V))} / (60 x T))
Q = V x (14.8 – ln (V)) / (60 x T)

When using a system with at least a 1 log (90%) but less than a 2 log (99.%) reduction of infective Cryptosporidium OOCYST through the SECONDARY DISINFECTION SYSTEM with each pass, the SECONDARY DISINFECTION SYSTEM flow rate (Q) shall be:

Q = 1.11 x V x (14.8 – ln (V)) / (60 x T)

where:

• Q = SECONDARY DISINFECTION SYSTEM flow rate (gpm)
• V = Total water volume of the AQUATIC VENUE or AQUATIC FEATURE, including surge tanks, piping, equipment, etc. (gals)
• T = Dilution time (hrs.)

-- Clean up equation symbols (parenthesis and braces). As noted above, a 1-log reduction per pass only requires an 11% greater flow rate to achieve the same level of overall Crypto reduction so should be an option. -- REFERENCES: Editorial. Standard calculation.

1 oocyst/100ml = 37.85 oocysts/gallon
fraction of oocysts remaining after 1 turnover = e^(10^(-LR) – 1)

[e^(10^(-LR) – 1)]^turnovers = 37.85/(100,000,000/V)

turnovers = (60 x T)*(Q/V) =
(-ln(37.85/100,000,000) - ln(V)) / (1 – 10^(-LR)) =
(14.79 – ln(V)) / (1 – 10^(-LR))

1/(1 – 10^(-LR)):
3-log factor: 1.001

2-log factor: 1.010
1-log factor: 1.111

MAHC Committee Response:

Partially agree. Equation symbols corrected.

Comment:

4.7.3.3.2.7 --Where a SECONDARY DISINFECTION SYSTEM is installed, a means to confirm the required flow rate to maintain ~~a minimum 3 log (99.9%)~~ the required reduction of infective Cryptosporidium OOCYST at the minimum flow rate as prescribed above. -- Makes consistent with previous section.

MAHC Committee Response:

Disagree. No change to require 3 log reduction.

Comment:

5.7.3.1.1.2 Code & ANNEX--Using Cyanuric Acid
AQUATIC VENUES using cyanuric acid: 2.0 PPM (MG/L) 20% of CYA level

Substantial laboratory data shows that kill times for microbial CONTAMINANTS are increased in the presence of cyanuric acid. However, the precise impacts on CT VALUES in a swimming POOL environment are not well-established. The impact on CT VALUES is mostly related to the hypochlorous acid (HOCl) concentration that can be calculated using known equilibrium constants. In general, studies show that the presence of CYA up to 50 360 MG/L increase CT VALUES under demand free conditions, and the amount of this increase depends upon the pH and the ratio of CYA to available CHLORINE. Studies suggest that this effect is partially mitigated with the addition of ammonia nitrogen as low as 0.05 MG/L by producing monochloramine which is a slower disinfectant than hypochlorous acid but remains unbound to CYA.

Algae control: Algae is more difficult to control than most pathogens and may
require higher FAC residuals >3.0 PPM (MG/L) in the presence of CYA although peer-reviewed data is lacking.-- O'Brien paper and its use:
You wrote a response: "The O'Brien paper relies primary [sic] on the use of computational techniques with only limited conformation using wet chemistry analysis." That statement is incorrect. As stated in the O'Brien paper "Experimental evaluations of K were based primarily on ultraviolet (U.V.) spectrophotometry, i.e., techniques such as differential spectrophotometry and spectrometric titrimetry." The use of computational techniques was only done for two purposes: 1) to make computations using previous results to iteratively hone in on the pH that would produce peak absorptions to most distinguish between different chemical species so that they could determine a more accurate pK and 2) they cross-checked their results against predicted hypochlorite ion concentration using wet chemistry for such comparison. Furthermore, the O'Brien paper was not the first to determine these equilibrium constants and

they compare their results against the somewhat less accurate but still consistent ones found by Monsanto and S.R.I.

Note that the 1994 Golaszewski paper (footnote 316) measured up to 360 ppm CYA and said (translated from French from the first sentence on page 209): "All of these reactions are governed by a system of equilibrium between the molecules dissociated or not
from cyanuric acid, H3Cy. Seux et al. (1984)
created a computer program developed from the model proposed by Brady et al. (1963), with reference values of the equilibrium constants
established by O'Brien et al. (1974) and by Pinsky et al.
(1981)."

In other words, the spreadsheet I sent to you and analysis of the data in the papers (sent to you in 2008) is the same kind of analysis done in scientific peer-reviewed research in 1984 and 1994. This analysis shows that one can predict the effect of Cyanuric Acid on chlorine.

Real-Pool Kill Times:
As for kill-time studies in real-pools, they are very limited, but you did not list one such study from Kowalski (1966). The problem with such studies is that they did bacterial counts of the pool water rather than using the pool water as source water to which pathogens are added and kill times measured.

FAC level with CYA:
An FC that is 20% of the CYA level results in an HOCl level roughly equivalent to an FC of 0.2 ppm with no CYA. This is about half the 0.4 ppm used as a reference in AOAC Method 965.13 "Disinfectant (Water) for Swimming Pools". Since current state codes allow for much lower levels, you can set this to 10% if you prefer for roughly half the rate of killing pathogens compared to a 20% level (ignoring effects from monochloramine CC).

Algae control:
As for algae, the only peer-reviewed paper (Footnote 344) is clearly flawed showing no correlation (I suspect ammonia-like substances in the nutrient broth thereby creating monochloramine or equivalent when chlorine was added). However, the over 60,000 members and over half-a-million visitors to the Trouble Free Pool website each month (and related website The PoolForum) demonstrate that green and black algae are prevented in growth with an FC/CYA ratio of 7.5% or greater (in non-SWG pools; in SWG pools it's a 5% ratio). The failure rate under these conditions is less than 1 in 5000 pools and is independent of algae nutrient (phosphate, nitrate) level. Some pools have over 3000 ppb phosphate (one had over 50,000 ppb due to massive use of HEDP metal sequestrant), but remain algae free if the appropriate minimum FC/CYA ratio is maintained.
-- REFERENCE: O'Brien J, Morris J, Butler J. "Equilibria in Aqueous Solutions of Chlorinated Isocyanurate", Chapter 14 in Rubin A, ed. Chemistry of Water Supply, Treatment and Distribution, 1973 Symposium, (published 1974), Ann Arbor Science Publishers, Ann Arbor, MI, pp. 333-358.
Since this book is out-of-print, I have an authorized scanned PDF of this chapter here for your convenience:

http://richardfalk.home.comcast.net/~richardfalk/pool/OBrien.htm

Separately sent document "Further Info.docx" analyzes the data from the sources in Footnotes 314, 317, 333, 315

(NEW SOURCE)
Kowalski X, Hilton TB. Comparison of Chlorinated Cyanurates With Other Chlorine Disinfectants. Public Health Reports. 1966 Mar;81(3):282-288.

MAHC Committee Response:

Disagree. The issue of stabilization, kill times, and equilibria is a complex issue and not an easy one to solve despite the discussion. The MAHC has tabled this discussion for now in favor of the CMAHC forming an expert panel to assess the scientific data behind this and give guidance on the use of these equilibrium constants for predicting acceptable pool levels. Unfortunately, communication via a pool website cannot be assessed as evidence of efficacy. Although this may be correct, no group we are aware of has looked at this in a scientific and systematic way. This will need to be done to start the discussion on whether the MAHC should change from the generally accepted practice currently in place in the MAHC can be made.

Comment:

5.7.3.1.3.1 -- Cyanuric acid or stabilized CHLORINE products levels shall not be used exceed 30 PPM (mg/L) at the following for all new construction, SUBSTANTIAL ALTERATION, or DISINFECTION equipment replacements after the effective date of this CODE:
1) SPAs; and
2) Therapy POOLS.

When CYA is used, the FC must be maintained at a minimum of 20% of the CYA level.

5.7.3.1.3.1.1 Replacement Times
These AQUATIC VENUEs shall no longer use not exceed cyanuric acid or stabilized CHLORINE products levels of 30 PPM (mg/L) no later than 4 years after adoption of this CODE.

When CYA is used, the FC must be maintained at a minimum of 20% of the CYA level.
-- There is no evidence that the proper use of a small amount of CYA in spas or therapy pools leads to any problems. The concern you have is that of reduced efficacy, but that is readily addressed by mandating a limited CYA level and a minimum FC/CYA ratio. This also ensures that the FC level will be high enough to not run out of chlorine with high bather-load which was the primary problem in the references you noted.

Exposing swimsuits, skin and hair to 3.0 ppm FC with no CYA is 7.5 times higher than the reference standard in the AOAC Method 965.13 used in the EPA DIS/TSS-12 laboratory efficacy test. Oxidation rates are roughly proportional to the active chlorine level (unbound to CYA).

CYA tests are available that measure down to 20 ppm which would be a reasonable level for spas, but for regulatory purposes 30 ppm is also OK of 6 ppm FAC is maintained.

I should note that at hot spa temperatures, the active chlorine level is higher due to the temperature dependence of the chlorinated isocyanurate equilibrium constants so the 20% FC/CYA ratio isn't equivalent to 0.2 ppm FC with no CYA, but at 104ºF it is equivalent to 0.8 ppm FC with no CYA at 77ºF or 0.95 ppm FC with no CYA at 104ºF. This is more than adequate for disinfection while not exposing the spa user to excessively high active chlorine levels.
-- REFERENCE: Tachikawaa M, Sayamaa C, Saitab K, Tezukaa M, Sawamuraa R. Effects of isocyanuric acid on the monochlorodimedone chlorinating rates with free chlorine and ammonia chloramine in water. Water Research. 2002 May;36(10):2547-2554.

Erdinger L, Kühn, K, Gabrio T. Formation of Trihalomethanes in Swimming Pool Water – Identification of Precursors and Kinetics of Formation. Proceedings of the 1st International Conference on Health and Water Quality Aspects of the Man Made Recreational Water Environment, Budapest. 2005 Mar.
(see Figure 5 regarding chlorination of skin).
http://www.researchgate.net/publication/242219466_Formation_of_Trihalomethanes_in_Swimming_Pool_Water_-_Identification_of_Precursors_and_Kinetics_of_Formation
OR
http://www.lims.hu/media/furdokonf/English/presentationsp/erdinger1_p.pdf

MAHC Committee Response:

Disagree. The issue of stabilization, kill times, and equilibria is a complex issue and not an easy one to solve despite the discussion. The MAHC has tabled this discussion for now in favor of the CMAHC forming an expert panel to assess the scientific data behind this and give guidance on the use of these equilibrium constants for predicting acceptable pool levels. Unfortunately, communication via a pool website cannot be assessed as evidence of efficacy. Although this may be correct, no group we are aware of has looked at this in a scientific and systematic way. This will need to be done to start the discussion on whether the MAHC should change from the generally accepted practice currently in place in the MAHC can be made.

Comment:

5.7.3.1.3.1 ANNEX--CYA acid is not a disinfectant so it is not registered by the EPA. Stabilized CHLORINES are registered with the EPA as disinfectants; however, EPA has not reviewed efficacy data on CHLORINE in the presence of stabilizer to date. The EPA reviewed efficacy data on dichlor and trichlor when it approved registrations for drinking water DISINFECTION. However, these data are not directly applicable to swimming POOLS where repeated doses lead to higher CYA levels. -- As I noted in my comments in the 1st round, the EPA did review efficacy of chlorine in the presence of CYA during the "field test requirements" of DIS/TSS-12 for each stabilized chlorine product. You may disagree with the performance standard for such field tests, but you cannot claim that the EPA has not reviewed efficacy data. DIS/TSS-12 states that "confirmatory efficacy data shall be derived from in-use tests under an Experimental

Use Permit in at least two swimming pools." -- REFERENCE: EPA DIS/TSS-12: http://www.epa.gov/oppad001/dis_tss_docs/dis-12.htm

MAHC Committee Response:

Partially agree. Have added "increased" in annex to clarify that EPA has not look at the impact of increasing CYA on disinfection.

Comment:

5.7.3.1.3.1.2 --The cyanuric acid level at AQUATIC VENUES not listed above shall remain at or below 100 50 PPM (MG/L). -- The text is unclear as to which aquatic venues this section applies since it is a sub-section under the one that says no CYA is to be used in spas and therapy pools after upgrade or after 4 years. Please clarify that.

If the FAC level recommendation of 20% of the CYA level is adopted, then the maximum CYA level of 50 ppm is reasonable for a maximum FAC of 10 ppm as allowed by some state codes (e.g. Florida). The active chlorine level is still roughly equivalent to 0.2 ppm FAC with no CYA.

Note that your current recommendations of 2.0 ppm FAC minimum with up to 100 ppm CYA (a ratio of 2%) would result in an HOCl level roughly equivalent to only 0.02 ppm FC with no CYA which is a factor of 20 lower than the reference standard in AOAC Method 965.13 used in the EPA DIS/TSS-12 laboratory efficacy test. It is also insufficient to prevent algae growth if algae nutrients are present and no supplemental algaecide is used.

MAHC Committee Response:

Partially agree. Section renumbered to clarify. The issue of stabilization, kill times, and equilibria is a complex issue and not an easy one to solve despite the discussion. The MAHC has tabled this discussion for now in favor of the CMAHC forming an expert panel to assess the scientific data behind this and give guidance on the use of these equilibrium constants for predicting acceptable pool levels. Unfortunately, communication via a pool website cannot be assessed as evidence of efficacy. Although this may be correct, no group we are aware of has looked at this in a scientific and systematic way. This will need to be done to start the discussion on whether the MAHC should change from the generally accepted practice currently in place in the MAHC can be made.

Comment:

5.7.4.3.3.3 ANNEX--For venues with water temperature greater than 90 degrees F, the range should be 100 to 400 200 PPM. -- Hot water precipitates calcium carbonate more readily and the temperature at the surface of a heat exchanger may be 30ºF higher than the water temperature. For a hot 104ºF spa, one should not have CH higher than 200 ppm and that is only if the TA level is kept low. At a TA of 60 ppm, pH of 7.5, CH of 400 ppm, temp of 104ºF, the CSI is +0.13, but at the heat exchanger may be +0.34.

Also note that there need not be a low end recommendation for CH since it is pH that affects

metal corrosion. The main reason for a CH of 120-150 ppm is to reduce foaming (though this could also be accomplished using magnesium chloride instead).

MAHC Committee Response:

Agree. Annex revised.

Comment:

5.7.4.4.2 ANNEX--A low Langelier Index (a value less than –0.3) can result in corrosion, BATHER irritation and discomfort. POOL water may that causes etching, pitting, dissolving and staining of walls, and grouting and plumbing.

Ryznar Stability Index (RSI)
(delete entire section)
-- A low CSI by itself does not cause metal corrosion. Low pH, dissolved oxygen or other oxidizers, higher temperature all accelerate metal corrosion.

The Ryzner Stability Index is ridiculous and only correlated with measured data due to its narrow range of conditions. With RSI = 2pHs – pH (measured), this says that if the pH is at the pH of saturation, then RSI = 2pHs – pHs = pHs so if the water is saturated with calcium carbonate the RSI claims that a pH > 8 would dissolve CaCO3 while a pH < 6.5 would be scale forming. That's ridiculous. When pH = pHs, there is chemical equilibrium with no dissolving nor scale forming.

If you want another index besides LSI (CSI) to use, then I suggest you look at the Calcium Carbonate Precipitation Potential (CCPP) which is still based on CSI but gives some measure of the self-extinguishing nature of changes from scaling or dissolving of calcium carbonate.
-- REFERENCE: See the following link for a discussion of saturation indices and metal corrosion:
http://www.corrosion-doctors.org/Cooling-Water-Towers/corrosivity.htm

MAHC Committee Response:

Agree. Ryzner Stability Index deleted from Annex.

Comment:

Glossary--"Disinfection" means a treatment that kills or irreversibly inactivates microorganisms (e.g., bacteria, viruses, and parasites); in water treatment, a chemical (commonly chlorine, chloramine, or ozone) or physical process (e.g., ultraviolet radiation) can be used. -- EPA Manual. The EPA definition for a disinfectant is "a substance, or mixture of substances, that destroys or irreversibly inactivates bacteria, fungi and viruses, but not necessarily bacterial spores, in the inanimate environment." -- REFERENCE: EPA Pesticide Registration Manual. Chapter 4 – Additional Considerations for Antimicrobial Products. Types of Antimicrobial Pesticides.

MAHC Committee Response:

Agree. Code revised.

Comment:

Glossary--"Free Available Chlorine" means the available disinfectant in the water. It is the portion of total chlorine that is not combined chlorine, is measured in standardized tests often referred to as "Free Chlorine" (FC) and is the chlorine capacity that can be quickly converted to become a available as effective disinfectant. When chlorine is added to water, hypochlorous acid is produced in either the molecular state (HOCl) or the ionized state (hypochlorite ion (OCl-) plus hydrogen ion (H+)), and a by-product specific to the type of chlorine is produced. It is the sum of hypochlorous acid (HOCl), hypochlorite ion (OCl-) and various chemical species of chlorine bound to Cyanuric Acid (CYA), if present. The CYA level, pH and temperature of the water determines the amount of hypochlorous acid in each state. HOCl is a very effective bactericide and is the active available chlorine disinfectant in the water. OCl- is also a bactericide, but acts more slowly than HOCl. Thus chlorine is a much less effective bactericide at high pH. The chlorine bound to CYA acts much more slowly than HOCl. The sum of HOCl and OCl- is referred to as "free chlorine" in pool water. Because the amount of HOCl is dependent on pH (though is less dependent when CYA is present), chlorine is a less effective bactericide at high pH. The hypochlorous acid that remains in pool water uncombined with ammonia is called "free available chlorine". A free available chlorine residual must be maintained for adequate disinfection. -- Removed previous suggestion for using the term "reservoir or reserve" as you wrote it was deemed to be non-standard.

You wrote a response: "This is a definition, and does not need to be an in-depth, page-long article." Because I suggested replacing some of the text, the new text is only 3 words longer than the original text, but far more accurate (when CYA is present).

You wrote a response: "Comment appears to be based on information provided in a 40-year old reference." This is insulting to the authors, some of whom I have spoken with personally (James N. Butler before he passed away in October, 2012; editor Alan J. Rubin via E-mail). The O'Brien paper is about equilibrium chemistry and was very carefully done as I will describe in responses to other comments where you make other statements about the paper. The other references I listed are 34, 24, 22, 20, and 12 years old. The MAHC already includes some footnoted references that are older than 1974:
footnote 40: 1950
footnote 70: 1962
and some nearly as old:
footnote 31: 1978
footnote 47: 1979
footnote 36: 1980
It is the quality and relevance of the material that matters, not its age.
-- REFERENCE: Chlorinated Isocyanurate Equilibrium Constants:
O'Brien J, Morris J, Butler J. "Equilibria in Aqueous Solutions of Chlorinated Isocyanurate", Chapter 14 in Rubin A, ed. Chemistry of Water Supply, Treatment and Distribution, 1973

Symposium, (published 1974), Ann Arbor Science Publishers, Ann Arbor, MI, pp. 333-358. Since this book is out-of-print, I have an authorized scanned PDF of this chapter here for your convenience:
http://richardfalk.home.comcast.net/~richardfalk/pool/OBrien.htm

Chlorinated Cyanurate Hydrolysis Rate Constants:
Matte D, Solastiouk B, Merlin A, Deglise X. Etude Cinetique de la N-Chloration de l'Acide Cyanurique en Phase Aqueuse (Kinetic Study of N-Chlorination of Cyanuric Acid in the Aqueous Phase). Canadian Journal of Chemistry. 1990;68(2):307-313.

Chlorinated Cyanurates Measured in FC Test:
Wajon JE, Morris JC. The analysis of free chlorine in the presence of nitrogenous organic compounds. Environment International. 1980;3(1):41-47.

OCl- disinfection time:
Akin EW, Hoff JC, Lippy EC. Waterborne Outbreak Control: Which Disinfectant?. Environmental Health Perspectives. 1982 Dec;46:7-12. (see Figure 3)

Chlorinated isocyanurate oxidation time:
Tachikawa M, Sayama C, Saita K, Tezuka M, Sawamura R. Effects of isocyanuric acid on the monochlorodimedone chlorinating rates with free chlorine and ammonia chloramine in water. Water Research. 2002 May;36(10):2547-2554.

Chlorinated isocyanurate disinfection time:
Golaszewski G, Seux R. Cinetiques de l'action bactericide des chloroisocyanurates sur trois bacteries: Pseudomonas aeruginosa, Streptococcus faecalis et Staphylococcus aureus (The kinetics of the action of chloroisocyanurates on three bacteria: Pseudomonas aeruginosa, Streptococcus faecalis and Staphylococcus aureus). Water Research. 1994;28(1):209-217.

Chlorinated Isocyanurate vs. HOCl chemical species distribution and pH dependence:
Editorial: see Tables 5-1, 5-2, 5-3 in separate NSPF-CPO-Suggestions.pdf document. Also see my 12/01/08 comments to section 3.2.1.1.2.

MAHC Committee Response:

Partially agree. Definition has been revised.

(56) Richard Fuller, Hyland Hills Park and Rec, Denver, CO
94 comments

Comment:

4.0.--Construction Overall, there needs to be specific guidance as to what is only required of new construction or substantial alteration and what is immediately required upon adoption of the code. Many of the Section 5 requirements are based on meeting Section 4

design/construction requirements. Is anything grandfathered? This is especially the case with the requirements for cleansing and rinse showers. Rinse showers have not been required by many if not most local codes to date. Installing such showers at existing venues will be extremely costly as new water and sewer lines will be required with resultant excavation work. Additionally, new water taps will also be required to support these additional showers at considerable expense.

MAHC Committee Response:

Agree. Code revised to include applicability of sections 4, 5, and 6 in Section 2 User Guide and at the beginning of Sections 4, 5, and 6.

Comment:

4.1.2.2--Do all of these plans and specs need to be available for already existing facilities/venues? Please clarify. Do not think it is possible to assemble all of these types of documents for every existing aquatic venue.

MAHC Committee Response:

Agree. Clarification regarding applicability of Sections 4, 5, and 6 have been included. Plans and specifications apply to newly constructed or substantially altered aquatic facilities/venues.

Comment:

4.1.2.3.5--Needs an additional non-swimming density factor for shallow water. Non-swimming area: ten (10) square feet of pool required for each person in that part of the pool less than three and one half (3 ½) feet.(present Colorado standard). -- REFERENCE: Colorado Swimming Pool code

MAHC Committee Response:

Disagree. Vertical use water is intended to cover non-swimming activities. See Annex for additional explanation.

Comment:

4.1.3.1.4--Much of this Code sets forth building requirements but the AHJ appears not able to actually do building, fire, electrical, etc. approvals. This will result in overlapping jurisdictions, confusing and contradictory requirements, etc.

MAHC Committee Response:

Disagree. Requirements specified in/by the MAHC are subject to review and approval by the AHJ. Typical building code requirements such as structural aspects, electrical systems, etc. are not included in the MAHC. As such, there will be overlap regarding overall facility approvals, however, much effort has been made to eliminate potential inconsistencies.

Comment:

4.1.3.1.7--what about existing aquatic facilities that do not have these types of plans?

MAHC Committee Response:

No change proposed by commenter. Plans and specifications apply to newly constructed or substantially altered aquatic facilities/venues. The Code has been revised to provide clarification regarding applicability of Sections 4, 5, and 6.

Comment:

4.1.3.2--This wording essentially requires every change, no matter how small, to be submitted for review to the AHJ. This is massive overkill and could delay even the smallest change for significant periods of time while the AHJ makes a decision.

MAHC Committee Response:

Disagree. This section requires the facility owner to contact/consult with the AHJ to determine if plans need to be submitted for review/approval. Substantial alteration (see definition section) is based on the cost of the work. Proposed alterations can have a significant impact on aspects of an aquatic facility while not exceeding the cost threshold. Preliminary consultation allows for an assessment of potential impact and possible need for plan submittal and approval.

Comment:

4.1.3.3--There should be no requirement for an actual submittal of documentation for replacement of equivalent equipment. This documentation should be maintained in the equipment maintenance log.

MAHC Committee Response:

Disagree. It is important for the AHJ to have a record of actual equipment installed as well as verification of the replacement equipment's equivalency to the original approved equipment.

Comment:

4.10.1.1--Not clear on how new construction or substantial alteration affects the amount of hygiene facilities required by 4.10.1.4. If an existing aquatic facility does not have the required number of hygiene facilities set forth but adds a small aquatic venue wading pool, does the aquatic facility now have to abide by the totals set forth in 4.10.1.4 or only those required to meet the occupant load of the new aquatic facility? Could make a big difference in construction costs and actively discourage improvements.

MAHC Committee Response:

Agree. Wording clarified. If the change meets the substantial alteration definition then, yes, they must upgrade for the outdoor venue that meets the definition. This does not mean for every venue in the outdoor facility, just those meeting the substantial alteration definition.

Comment:

4.10.1.5.1--Referenced code provision does not exist. 4.1.2.3.5?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.3.3.3--The ADAAG is only advisory and not enforceable until adopted by the Department of Justice. The ADAAG should not be administratively adopted into this code. Substitute ADA regulations.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.10.3.4--Substitute BARRIERS for ENCLOSURES.

MAHC Committee Response:

Disagree. Enclosure is appropriate here. However, Code revised to remove capitalization for ENCLOSURE.

Comment:

4.10.4.2.1--The required number of cleansing showers will significantly drive up the costs of construction including the costs of larger water taps. Also “BATHER LOAD” referenced in 2) is not the same thing as BATHERS set forth in Minimum 4.10.4.2.2 Changing from BATHER LOAD to BATHERS significantly increases the number of cleansing showers required. BATHERS do not directly correlate to the maximum amount of persons allowed in an aquatic venue.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.10.4.4.1--Refers to BATHER LOAD while 4.10.4.2.2 refers to BATHERS. Need to clarify.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.11.2.3--The limitation on protruding no more than 2" should not be required where the fill spout is located in a position where bathers cannot come in contact with it.

MAHC Committee Response:

Disagree. No change to code necessary as, should there be a proposal where the fill spout is located in a position where bathers cannot come in contact with it, a variance can be considered.

Comment:

4.12.--Do these requirements apply only to new construction/substantial renovation? Please clarify.

MAHC Committee Response:

Agree. Clarification regarding applicability of Sections 4, 5, and 6 have been included. Plans and specifications apply to newly constructed or substantially altered aquatic facilities/venues.

Comment:

4.12.2.1.2--Strongly recommend that no specific ASTM references be included in the code as these changes and get renumbered. Suggest reference to "applicable ASTM design and construction STANDARDS". Also, WWA no longer supports the Considerations and it is very much out of date. Should not include European Standards as American aquatic facilities have no input in these standards.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.12.3.2.5--There is no 4.5.4.1.2

MAHC Committee Response:

Agree. Code revised.

Comment:

4.12.5.2.1--The 150' egress/access requirement is unnecessary, does not improve safety, creates additional blockages in the Lazy River flow, creates additional opportunities for tubes to flip over, creates additional expense, etc. The Annex did not set forth any justification for

this requirement. Lazy River water depth is such that almost all users can safely walk, if necessary. Additionally, bathers are on inner tubes which require little or no physical effort and can easily float on the inner tube until an exit is reached.

MAHC Committee Response:

Disagree. Annex provides rationale for the distance requirement.

Comment:

4.12.5.2.2--Handholds should not be required in a Lazy River. These are shallow pools which can be walked by most bathers. Bathers ride on an inner tube and do not expend much physical effort. Handholds will only result in a number of bathers grabbing them, impeding the flow of the River, causing tubes to jam together with increased risk of flipping over in a mass of tubes. This is an extremely bad idea for this type of aquatic venue.

MAHC Committee Response:

Disagree. The intent was to have it along the length of the river, either on the inside perimeter, outside perimeter, or both. Because of their generally narrow width, most are in skimmer pools, so the coping +6" above the water level serves this requirement. But there are still many in gutter pools where there is a tiled handhold in front of a gutter.

We defined narrower rivers (less than 8 ft. in width) as current channels. This 8 ft. wide dimension usually determines the minimum clearance for inner tubes to be used somewhat comfortably. There are many "current channels" at municipal indoor rec pools because space is such a premium. There is concern about bathers who venture from one area of a pool into the mouth of a current channel and being caught off-guard by the pace of the current with nothing to grab ahold of. And even if most are shallow enough to stand, some have a velocity that make standing fairly difficult.

Comment:

4.12.8.4.2--Drains meeting VGB Act requirements should be allowed

MAHC Committee Response:

Agree. No change necessary. Interactive Water Play Venues must be designed to prevent standing water in the venue and have gravity drains. Direct suction from the drain outlets is prohibited and not feasible.

Comment:

4.12.9.2.1--Term "ENCLOSURE" is defined as a barrier securing an aquatic facility and should not be used to refer to an interior barrier.

MAHC Committee Response:

Partially agree. In the context of the sentence, use of enclosure is intended to mean surround on all sides. Code revised to avoid confusion.

Comment:

4.2.--Again, it is very important to clarify whether these requirements are for new construction and substantial alterations only or if required of all aquatic facilities upon adoption

MAHC Committee Response:

Agree. Clarification regarding applicability of Sections 4, 5, and 6 have been included.

Comment:

4.2.1.2.1--How is "darker colors" defined? See also page 80, Dark Colors 4.2.1.4.4; In general, this section title does not match the verbiage. Should this section be titled variances? Dark colors is also the section title of 4.5.12.1.3

MAHC Committee Response:

Agree. Code revised for clarity.

Comment:

4.3.--Does this apply to existing or only new construction? Please clarify

MAHC Committee Response:

Agree. Clarification regarding applicability of Sections 4, 5, and 6 have been included.

Comment:

4.3.1.1--What if older pools have equipment that is not listed?

MAHC Committee Response:

Agree. Clarification regarding applicability of Sections 4, 5, and 6 have been included. Section 4, Design and Construction requirements apply to newly constructed or substantially altered aquatic facilities/venues.

Comment:

4.3.2.1--What if older pools have equipment that is not listed? Please clarify

MAHC Committee Response:

Agree. Clarification regarding applicability of Sections 4, 5, and 6 have been included. Section 4, Design and Construction requirements apply to newly constructed or substantially altered aquatic facilities/venues.

Comment:

4.5.--Does this apply to existing or only new construction? Please clarify

MAHC Committee Response:

Agree. Clarification regarding applicability of Sections 4, 5, and 6 have been included. Section 4, Design and Construction requirements apply to newly constructed or substantially altered aquatic facilities/venues.

Comment:

4.5.12.1.3-- Need to define "darker colors". Also this says the AHJ may grant a variance as long as all of the criteria are met. Why would we need a variance if all of the criteria are met. What, exactly are the "criteria"?

MAHC Committee Response:

Agree. Code revised for clarity.

Comment:

4.5.4.1--Catch pools and plunge pools should be exempt from this requirement. These types of pools are not governed by ADA two access rule and safety dictates only one exit and only one means of access from the slide itself

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.8.6--Why is this standard different from ladder spacing set forth in 4.5.9.3.3?

MAHC Committee Response:

No change proposed by commenter. No change to be made at this time without supporting rationale.

Comment:

4.5.9.2.5--Shouldn't the load be along the length of the ladder railing?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.9.2.7--Shouldn't the load be along the length of the ladder?

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.1.10--Many existing aquatic venues were not designed/constructed to meet these new requirements. They need to be grandfathered in. Upgrades to meet this standard for many existing aquatic venues would be very costly to the point that such venues would be shut down.

MAHC Committee Response:

Agreed. Clarification regarding applicability of Sections 4, 5, and 6 have been included. Section 4, Design and Construction requirements apply to newly constructed or substantially altered aquatic facilities/venues.

Comment:

4.7.1.4.5--The 1/16th tolerance in not practical in pool construction. ¼" is preferable as is set forth in Skimmer Base, 4.7.1.5.5.1

MAHC Committee Response:

Disagree. This tolerance is practical in construction and +/- 1/4 inch can result in a 1/2 inch difference in elevation which will result in inefficient full perimeter skimming.

Comment:

4.7.1.5.6.1--"flotation test" is not defined

MAHC Committee Response:

Partially agree. The Annex contains a description/instructions for conducting the test.

Comment:

4.7.1.6.2.1.3--Seems to be in opposition to the requirements of Proportioning Valve 4.7.1.6.4.2 What is the system overflow piping, should this say skimmer, or gutter?

MAHC Committee Response:

Disagree. Section 4.7.1.6.4.2 addresses the relative flow distribution between the main drain flow and the surface skimming system flow.

Comment:

4.7.1.9.1--the +/-5% figure is too fine for actual use. Should be no less than

MAHC Committee Response:

Disagree. See Annex for rationale and discussion.

Comment:

4.7.4.2.3--There seems to be no consideration of aquatic facilities situated in arid/drought stricken climates. Waterparks would be discharging 4 gals/attendee – without reference to whether each such attendee actually was immersed in a pool or merely came in contact with a very limited amount of water in a slide or while traveling on a raft. At an average attendance figure of 5,000 attendees over a 90 day season, 1.8 million gallons of water would be discharged – an intolerable amount in arid climates.

MAHC Committee Response:

Disagree. All bathers add wastes that cannot be removed by normal pool filtration and chlorine. This section of the MAHC addresses contaminants that cannot be removed cost-effectively by other means to help control water quality and air quality for pools.

Comment:

4.8.--Is this applicable to all facilities or only for new construction? Please clarify

MAHC Committee Response:

Agree. Code revised to include applicability of sections 4, 5, and 6 in Section 2 User Guide and at the beginning of Sections 4, 5, and 6.

Comment:

4.8.1.1.2.1--A minimum of 4 feet of deck is not always necessary. This section should simply state " DECKS shall have a sufficient clearance from AQUATIC VENUE edge to fencing or other obstruction to allows ….".

MAHC Committee Response:

Disagree. Annex contains the following discussion: Traditional AQUATIC VENUEs should be surrounded by clear DECK space to allow for operational flow (foot traffic) as well as space to perform in the event of an emergency situation. Non-traditional AQUATIC VENUEs such as LAZY RIVERS, WAVE POOLS, etc. are not required to have clear space around due to the need to control access by providing a BARRIER to block access into unapproved entry areas. Both guarded and unguarded AQUATIC VENUEs should have the same clear space requirements.

Comment:

4.8.1.4.3--Artificial turf, manufactured for outdoor use, is frequently used in large aquatic facilities/waterparks adjacent to the perimeter deck to provide comfort to bathers and provide some protection from the heat of concrete surfaces during hot weather. Years of experience with this covering has proven it to be safe and patron friendly with reasonable maintenance.

MAHC Committee Response:

Disagree. Annex contains the following discussion: Carpet and artificial turf have been found to be inappropriate finish materials for the wettest area immediately around the POOL, i.e. PERIMETER DECK. Although the materials that carpet is manufactured from are durable and do not support mold growth, when they are installed over a relatively impermeable surface, water flows very slowly through the carpet. Soil and CONTAMINANTS entering into the carpet are not easily removed. Since the carpet stays wet longer, and soil and CONTAMINANTS remain in the carpet mold and algae growth is observed. Therefore carpeting is not an acceptable finish material in the wet PERIMETER DECK.
Finish materials for the PERIMETER DECK should not block DECK drains or impair water flowing to DECK drains.
Carpeting can be installed beyond the DECK drains, i.e. DRY DECK.

Comment:

4.8.1.5.1.2--Perimeter decking is not required around 100% of an aquatic venue. For example, a wave pool has a head wall and neither lifeguards or bathers are allowed access at the headwall for safety purposes. Lifeguard access from the sides of the pool are more than sufficient

MAHC Committee Response:

Disagree. However, code revised to specifically address perimeter deck requirement for wave pools. Annex contains the following discussion: Traditional AQUATIC VENUEs should be surrounded by clear DECK space to allow for operational flow (foot traffic) as well as space to perform in the event of an emergency situation. Non-traditional AQUATIC VENUEs such as LAZY RIVERS, WAVE POOLS, etc. are not required to have clear space around due to the need to control access by providing a BARRIER to block access into unapproved entry areas. Both guarded and unguarded AQUATIC VENUEs should have the same clear space requirements.

Comment:

4.8.6.1.1--This section mixes terms inappropriately. An ENCLSOURE surrounds and secures an aquatic facility. An ENCLOSURE, by definition, cannot secure individual buildings, rooms, etc within an aquatic facility. Replace ENCLOSURE with BARRIER.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

4.8.6.2.3--This just repeats the language of 4.8.6.2.2 and should be deleted.

MAHC Committee Response:

Agree

Comment:

4.8.6.2.4.3--Should this reference be to a BARRIER not an enclosure? Also, why should an ENCLOSURE be constructed to separate a non-operating Aquatic Venue from the exit pathway? What if the Aquatic Venue is closed only for an hour or a day for maintenance? This requirement is extremely impractical and expensive. If there is any fear of patrons entering a non-operational aquatic venue, staff can be stationed at the venue to prevent this.

MAHC Committee Response:

Agree; selection deleted.

Comment:

4.8.6.3.1--An AQUATIC VENUE ENCLOSURE is defined as an aquatic facility enclosure and, thus, not applicable here. Should add a proper definition of either AQUATIC VENUE ENCLOSURE or AQUATIC VENUE BARRIER. Should also provide for an automatic variance for guarded aquatic venues within a larger aquatic facility.

MAHC Committee Response:

Partially agree. Code revised. It is necessary to keep this requirement to equip the gates/doors with the self-closing and self-latching hardware, in this Design and Construction section. However, a new section in Operation and Maintenance has been added to allow the gates/doors to be maintained open if the gates/doors are staffed at all times when open.

Comment:

4.8.6.5.1--Either use the term BARRIER or change definition of ENCLOSURE which is defined as “surrounding and securing an aquatic facility”

MAHC Committee Response:

Agree. Definition changed.

Comment:

4.8.7.5--This requirement is highly impractical in settings where the aquatic venue is a large stand-alone pool and a portable vacuum is being used. This would require a number of receptacles to be provided around the pool perimeter – most likely by being embedded in the deck surrounding the pool or rising up out of the deck. This could cause a number of electrical shock hazards. The key seems to be to have a large enough cord on the portable vacuum to

keep the cord connection to the extension cord safely out of the water. Also, 5.6.3.6, Extension Cords, sets forth reasonable regulations on the use of an extension cord.

MAHC Committee Response:

Agree; deleted section 4.8.7.5. Section 5.6.3.6 provides provisions for extension cord use.

Comment:

4.9.1.2.2--Replace ENCLOSURE with BARRIER

MAHC Committee Response:

Agree; deleted enclosure for clarity.

Comment:

4.9.2--Does this apply to all existing facilities or just new construction? Please clarify

MAHC Committee Response:

Agree: Added statement to front of each section (4-6 clarifying this).

Comment:

4.9.2.1.1--Replace ENCLOSURE with BARRIER or change definition of ENCLOSURE.

MAHC Committee Response:

Disagree. Used language submitted from another commenter to address this concern.

Comment:

4.9.2.1.3--By definition, a CHEMICAL STORAGE SPACE is an interior space. Remove this reference

MAHC Committee Response:

Agree; removed interior to clear up confusion indicated by other commenters.

Comment:

4.9.2.1.4--4.9.2.1.1 encourages chemicals to be stored outdoors but this section seems to indicate the contrary. Needs clarification on why CHEMICAL STORAGE SPACE is required

MAHC Committee Response:

Agree. Removed reference to interior space. Chemical storage can be either an interior or exterior space

Comment:

4.9.2.2.5--Delete “interior” as definition of CHEMICAL STORAGE SPACE is an interior space.

MAHC Committee Response:

Agree

Comment:

4.9.2.3--By definition, a chemical storage space is an “interior” space. Delete reference.

MAHC Committee Response:

Disagree. The definition has been changed to delete “interior” since the MAHC lays out specific sections for interior and exterior spaces.

Comment:

4.9.2.3.1--No such thing as an exterior CHEMICAL STORAGE SPACE by definition.

MAHC Committee Response:

Disagree. The definition has been changed to delete “interior” since the MAHC lays out specific sections for interior and exterior spaces.

Comment:

4.9.2.3.2--No such thing as an outdoor CHEMICAL STORAGE SPACE by definition.

MAHC Committee Response:

Agreed, changed to exterior instead of outdoor.

Comment:

4.9.2.5--“Interior” is redundant per definition.

MAHC Committee Response:

Disagree. The definition has been changed to delete “interior” since the MAHC lays out specific sections for interior and exterior spaces.

Comment:

4.9.2.6--Interior” is redundant per definition.

MAHC Committee Response:

Disagree. The definition has been changed to delete “interior” since the MAHC lays out specific sections for interior and exterior spaces.

Comment:

4.9.2.7--Interior” is redundant per definition.

MAHC Committee Response:

Disagree. The definition has been changed to delete “interior” since the MAHC lays out specific sections for interior and exterior spaces.

Comment:

4.9.2.8--Interior” is redundant per definition.

MAHC Committee Response:

Disagree. The definition has been changed to delete “interior” since the MAHC lays out specific sections for interior and exterior spaces.

Comment:

5.1.1.2--A separate permit is required for each “newly constructed or substantially altered” AQUATIC VENUE.

MAHC Committee Response:

Agreed, edited.

Comment:

5.1.1.4 to 5.1.1.8--An aquatic venue should undergo an initial permitting process when newly constructed or substantially altered. After that, the aquatic facility should be licensed yearly, not each venue. For large waterparks, this would require separate permits for a large number of aquatic venues – each with a separate permitting fee at substantial additional cost. -- To limit the permit to only the seasonal period of operation in any year, will wreak havoc on waterpark openings. In many areas of the United States, there is an extremely short period of time to prepare an aquatic facility to open due to inclimate weather conditions into May. Trying to get a representative of the AHJ to separately permit every Aquatic Venue in an Aquatic Facility in a few weeks in May will inevitably delay waterpark openings for no good reason and with no reason to suspect any Aquatic Venue does not meet the code. Processing time of multiple permits alone will result in unnecessary and bureaucratic delays. At minimum, the AHJ should be provided flexibility regarding permit expiration dates to allow sufficient time for owners/inspectors to renew the permits. More practically, once an aquatic venue has been permitted for the first time, only a permit for the aquatic facility should be required.

MAHC Committee Response:

Agreed. Permit by facility but new or substantial modification of a venue will require permit.

Comment:

5.12.7.2--Why do spas need to be drained weekly if the water is running though a filtration system. Should be an exception.

MAHC Committee Response:

Agreed. Performance based on water quality criteria.

Comment:

5.4.1.2.3--Amend to state "An owner or operator of an AQUATIC VENUE closed for more than seven days shall verify that the AQUATIC VENUE meets all applicable criteria of this CODE before reopening the AQUATIC VENUE." Want to insure that non applicable criteria are not included and that any variances granted would remain.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.6.7.4.2--This has not been a requirement to date and many aquatic venues may not have the equipment in place to do this. Older venues should be grandfathered in. Additionally, in areas of drought and water restrictions, this may prove inordinately expensive or require aquatic facility closure. Additionally, the similar construction/design requirements of 4.7.4.2.3 refer to BATHER per day per AQUATIC VENUE while this requirement refers to BATHER per day per facility. Should be the same standard.

MAHC Committee Response:

Partially agree. Code revised to be consistent with section 4.7.4.2.3. Disagree. Grandfathering not appropriate as all bathers add wastes that cannot be removed by normal pool filtration and chlorine. This section of the MAHC addresses contaminants that cannot be removed cost-effectively by other means to help control water quality and air quality for pools. Admittedly, the exact amount of water to discharge is not known and will likely vary between pools (based on location, source water, bather density, temperatures, etc..). It is generally accepted that some water must be discharged to remove contaminants that will otherwise accumulate in pools over time. Knowing pump gpm and knowing how much time one is backwashing can be used to calculate the volume discharged.

Comment:

5.7.1.4.2--Automatic fill should not be required where there are sufficient personnel at the aquatic venue to insure the venue pool water is at the proper height. Automatic fill systems in larger venues do not always function properly and are difficult to regulate.

MAHC Committee Response:

Agreed, clarified "if installed".

Comment:

5.7.1.9.1--The turnover requirements (4.7.1.10) are for new construction /design. Many existing Aquatic Venues cannot meet these requirements without substantial expense. They should be grandfathered.

MAHC Committee Response:

Agreed. Edited to clarify.

Comment:

5.7.2.1.4--Backwashing should be based on manufacturer's instructions – not an arbitrary period of time.

MAHC Committee Response:

Agreed, deleted.

Comment:

5.8.5.2.1.3--Not sure what this section is trying to do. It seems to permit alternate systems. However, by adding the necessity to meet the requirements of 5.8.5.2.1.2, there are no other alternate functional systems allowed under this section. The reference to 5.8.5.2.1.2 should be stricken and the term "regulatory authority" should be replaced with AHJ

MAHC Committee Response:

Agreed, edited.

Comment:

5.9.1.13.1--"CHEMICAL STORAGE AREA" is used but is not a defined term. "CHEMICAL STORAGE SPACE"? See also use of "chemical STORAGE area" in 5.9.1.9, 5.9.1.13

MAHC Committee Response:

Agreed. Altered all the Chemical storage space.

Comment:

5.9.1.14--"CHEMICAL STORAGE AREA" is used but is not a defined term. "CHEMICAL STORAGE SPACE"? See also use of "chemical STORAGE area" in 5.9.1.9, 5.9.1.13

MAHC Committee Response:

Agreed. Changed to chemical storage space.

Comment:

5.9.1.8--"CHEMICAL STORAGE AREA" is used but is not a defined term. "CHEMICAL STORAGE SPACE"? See also use of "chemical STORAGE area" in 5.9.1.9, 5.9.1.13

MAHC Committee Response:

Agreed. Changed to correct term.

Comment:

6.3.3.1.2--Many waterparks have, for years, successfully utilized a rotation system of rotating to a new position every 30 minutes and then a minimum of 10 minute break after 90 minutes of bather surveillance. The 60 minute limitation appears rather arbitrary. Alternatives to the 60 minute limitation should be allowed with AHJ approved lifeguard training agency for the aquatic facility approval. At minimum this requirement should exclude all lifeguards at the top and bottom of waterslides as they are more involved in ride dispatch than surveillance. Also, is this really "PATRON surveillance or rather BATHER surveillance based on the definitions of those terms. PATRON means anyone inside the Aquatic Facility Enclosure. Surely, lifeguards are not required to scan deck area.

MAHC Committee Response:

Disagree. Deck areas are part of the zone of patron surveillance for some lifeguard stations to prevent incidents from occurring (i.e., stop running on deck, stop diving from deck to shallow water, and otherwise enforcing rules). Disagree with deviation from 60 minute alteration of task requirement as annex supports this practice.

Comment:

6.4.1.2.2.1--At a large Aquatic Facility, the Qualified Operator is physically unable to personally complete all the requirements of this daily inspection. Needs to be amended to state Qualified Operator shall insure that daily inspections are completed by a QUALIFIED PERSON.

MAHC Committee Response:

Agreed. Have edited wording to allow others to perform work but operator ensures it is done.

Comment:

6.4.1.2.3.3--This requirement is overbroad. Minor injuries/illnesses such as scrapped toes, dehydration, sunburn, bee sting etc. should not require a report and a minimum of 48 hours should be allowed for reporting.

MAHC Committee Response:

Agreed. Minor issues not included.

Comment:

6.4.1.2.8.3--Is BATHER LOAD relevant or actual BATHERS in the Aquatic Venue?

MAHC Committee Response:

Agreed. Meant to be bathers, edited to reflect.

Comment:

6.4.2.2.4--For Aquatic Facilities with many Aquatic Venues, how is BATHER capacity addressed? Signage posted at hygiene facilities and diaper changing stations should not be required to have at least 1 inch lettering. This is overkill for these areas and will just result in sign pollution and resultant lack of attention to any signage in the Aquatic Facility. The CDC has made available a number of small posters relating to many of the hygiene issues that are effective and are not huge signs.

MAHC Committee Response:

Disagree. Bather capacity is addressed at entrance for entire facility and in 6.4.2.2.3.5. Letters smaller than this cannot be read from necessary distance. The MAHC has allowed facilities to be creative in how they do their signage by requiring intent vs. specific wording.

Comment:

6.4.2.4.3--This section has nothing to do with signage and is already required in multiple other sections. Delete

MAHC Committee Response:

Agreed. Deleted.

Comment:

6.6.4.1--Improper use of the term ENCLOSURE when BARRIER should be used.

MAHC Committee Response:

Agreed. Edited.

Comment:

6.6.6.2--If the Aquatic Venue is closed by order of the AHJ and the operator is taking steps to cure the violation, why would each day of closure count as a new violation

MAHC Committee Response:

Agreed; edited to add "willful" and added text to annex.

Comment:

6.6.7.1--First, there is a reference to “this article”. “Article” is not a term defined or used in this CODE. Not sure what is meant here. If this refers to the CODE, this statement is just unbelievable and totally unjustified. Many of the provisions of this Code have very little impact on public health or safety and no correlation to any acceptable definition of public nuisance. For example, the loss of a certification of one lifeguard (who is properly certified) does not constitute a public nuisance. The term public nuisance brings with it potential additional private legal remedies for patrons and others which could lead to any number of very minor but costly civil actions. No Code should ever ruin an aquatic venues reputation for minor violations. No aquatic venue is perfect. This adds nothing useful to the Code.

MAHC Committee Response:

Agreed. Deleted. Health hazards defined earlier.

Comment:

General--This Code is too closely tied to traditional aquatic facilities with only one pool. It is too restrictive of alternatives for larger aquatic facilities with multiple aquatic venues, numerous trained full-time staff on duty and a wide variety of aquatic venues – one size does not fit all. There should be a specific section allowing for permanent modifications/variances based on GENRALLY ACEPTED PRACTICES.

MAHC Committee Response:

Agreed that one size does not fit all. The MAHC has many areas where it differentiates between such types of facilities.

Comment:

Glossary--Enclosure – how does this differ from Aquatic Facility or Venue Enclosure ? This term is used multiple times regarding barriers within an AQUATIC FACILITY and should be either substituted in those areas with the term BARRIER or redefined.

MAHC Committee Response:

Agree. Definition revised.

Comment:

Glossary--High Risk Venue – should this be High Risk Aquatic Venue?

MAHC Committee Response:

Agree. This term has been deleted---it is meant to be "increased risk".

Comment:

Glossary--Circulation Path – should be in accordance with ADA regs, not ADAAG which are guidelines only and not enforceable until adopted by the Department of Justice.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Dry Deck . Some confusion here, does every aquatic venue have a dry deck or only pools? Should the first period be removed to form one long sentence? Does the wording after the parentheses refer back to perimeter and pool deck or does is refer to Dry Deck?

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Exit Gate or Door – seems to be some typos here. Emergency?

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--Water Slide – definition states slides into a pool but examples include slides with runouts/no pool exit.

MAHC Committee Response:

Agreed. The slide is an aquatic feature not a venue. Definition edited under "Slide".

Comment:

Glossary--Aquatic Venue – it seems like water slides are not considered aquatic venues. Can we just make this assumption or do we need clarification. This is important regarding how bather load is computed on 4.1.2.3.5, page 74.

MAHC Committee Response:

Agreed. The waterslide is an aquatic feature. The catch pool is considered an aquatic venue. See revised definition for "slide". Peak occupancy has new definition.

Comment:

Glossary--Occupant Load – definition does not make sense. Instructions are available for determining bather load but the references to dry, pool and perimeter deck do not provide a means of additional calculation. Is this square footage? How many bathers per square foot of deck area? Also, square footage of deck area is not directly correlated to the amount of persons actually present at any aquatic venue. A deck square footage based requirement will just result in the smallest most crowded decks possible to reduce construction costs.

MAHC Committee Response:

Agreed. Theoretical Peak Occupancy now defined to address this issue.

Comment:

Glossary--Increased Risk Aquatic Venue – gives one example as a wading pool but wading pool is also listed under High Risk Venue

MAHC Committee Response:

Agreed. High risk deleted.

Comment:

Glossary--Aquatic Facility or Venue Enclosure – should strike "Venue Enclosure" as is defined as an aquatic facility enclosure only.

MAHC Committee Response:

Disagree. Edited wording since this could be for either a venue and facility.

Comment:

Glossary--Chemical Storage Space – is there any threshold amount of chemical which causes a space to be a chemical storage space? Are these EPA recognized chemicals only?

MAHC Committee Response:

No change requested. No threshold set and this could include other chemicals.

(57) Rick Coffey, Lo-Chlor, LC, Fort Lauderdale, FL
2 comments

Comment:

4.7.3.2.2.2--{"All CHLORINE dosing and generating equipment including erosion feeders shall be sized to provide the following minimum dosage: 1) Outdoor POOLs (unstabilized): 1.25lbs/day/FAC/10,000 gals. of POOL water. 2) Indoor POOLs: 1.0lbs/day/FAC/10,000 gals.

of POOL water."}

4.7.3.2.2 (Remove all text in this section)
-- There is no directly relevant or practical scientific data to support these values. There are well-known contributors to chlorine demand that are used as factors used in sizing chlorinators; this text ignores them all.

Section 4.7.3.2.2.1 Sizing already addresses the real health concern which is to maintain minimum disinfectant levels.

MAHC Committee Response:

Disagree. Chlorine dosage requirements were revised based on public comment submitted in response to the individual module public comment period. A significant change such as this needs additional stakeholder input. A workgroup should be established by the CMAHC to address this issue (chlorine dosage requirements) and bring recommendations for a code change to the 2015 CMAHC conference.

Comment:

4.7.3.2.6.6--{"4.7.3.2.6.6 The generator(s) shall be capable of providing a CHLORINE dosage equivalent to 100% of the total daily facility requirement."}

4.7.3.2.6.6 (Remove all text in this section)

-- There is no good reason (health or otherwise) for forbidding that a split primary disinfection system (two or more different components together delivering 100% of the total daily facility requirement) be used.

MAHC Committee Response:

Agree. Code revised, section deleted.

(58) Robert Burrows, SureWater Technologies, Inc., Winter Park, FL
2 comments

Comment:

4.7.3.2.5.1--Liquid solution feeders shall include flow-through chemical feeders and positive displacement pumps such as peristaltic pumps, diaphragm pumps, and piston pumps. -- "Liquid solution feeders" include flow-through fluid chemical vacuum induction venturi type as well as metering pumps, and are previously mentioned in section 4.7.3.2.1.1, but omitted here. Please do not omit flow-through liquid solution (sodium hypochlorite) feeders from this section. -- REFERENCE: See section 4.7.3.2.1.1, Feeders & Devices; also see NSF/ANSI 50 Listing, Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities, Flow

Through Chemical Feeding Equipment;
http://info.nsf.org/Certified/Pools/Listings.asp?ProductType=50H&

MAHC Committee Response:

Disagree. Flow through chemical feeders are covered in section 4.7.3.2.5.2 Erosion Feeders.

Comment:

4.7.3.2.7.3--pH adjustment feeders shall be flow-through chemical or positive displacement type. -- Certain Flow-through chemical feeders are NSF/ANSI 50 Listed for pH adjustment with use of Muriatic and/or Sulfuric Acid. (See NSF reference citation.) Please do not omit flow-through chemical feeders specifically designed and tested for use with acid from this section. -- REFERENCE: NSF/ANSI 50 Listing, Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities, Flow Through Chemical Feeding Equipment;
http://info.nsf.org/Certified/Pools/Listings.asp?ProductType=50H&

MAHC Committee Response:

Agree. Code revised.

(59) Robert Crandall, Academic Researcher, Roseville, CA
1 comment

Comment:

4.7.3.4.5--See Document titled "Crandall -- MAHC Comments and Rationale" for full comment text. Excerpt: "I am deeply concerned about the prohibition of UV-H2O2 treatment systems for a number of reasons;
1. The prohibition would be detrimental to public health & safety.
2. The prohibition would be in contradiction to many existing State and Local requirements.
3. The reasoning for the prohibition contains a number of inaccurate and scientifically incorrect statements which form the basis for the prohibition.
4. The prohibition would act as a restraint of trade, thereby discouraging market competition, and more importantly, limit choices for users seeking better disinfection solutions.
The details of my concerns are summarized as follows..."

MAHC Committee Response:

Disagree. No change at this time. A change such as this needs additional stakeholder input. Recommendations for a code change with supporting documentation should be submitted in advance for consideration at the 2015 CMAHC conference.

(60) Romann Rademacher, Wibit Sports GmbH, Bocholt, Germany

1 comment

Comment:

4.12.8--Add: “Use if inflatable play structures on the water”. We have read of the MAHC draft and found nowhere a section on how inflatable products are treated that are used on the water. In Europe this is clearly defined through the Standard EN 15649. We have a large customer base in the USA including YMCA´s, etc. that uses these products in pools and are requesting standards for the use in a pool environment. We would gladly provide more information on this topic so feel free to contact myself directly as I am the Vice Chairman of the European Committee.

MAHC Committee Response:

Disagree. Inflatable structures as addressed in Standard EN 15649, are not within the intent of types of features addressed under "Interactive Water Play Venues" or "Interactive Water Play Features". Recommend that commenter submit proposed requirements to address inflatable structures for future MAHC revisions.

(61) Sara Yerkes, ICC, Washington, DC
1 comment

Comment:

4.0.--Remove Chapter 4.0, Design and Construction in its entirety. -- The provisions addressing the design and construction of pools and spas in the MAHC overlap with existing private sector consensus standards that comply with OMB Circular No. A119 provisions, such as the ICC International Swimming Pool and Spa Code (ISPSC). OMB A119 sets a policy of government agency reliance on and use of private sector standards. The proposed provisions in Chapter 4.0 of the MAHC violate that directive, and are not as comprehensive as existing private sector consensus standards. -- REFERENCE: 2012 International Swimming Pool and Spa Code
2015 International Swimming Pool and Spa Code

MAHC Committee Response:

Disagree. The standards developed under the MAHC are voluntary consensus standards which, with the participation and support of CDC, are consistent with the purposes and goals of OMB Circular A-119. First, agency participation in the development of voluntary consensus standards is encouraged by OMB when it is in the public interest. By helping to draft the MAHC, CDC has eliminated the need to develop government-unique standards and is furthering its goals to improve public health and safety. CDC has consulted with public health, academia, and industry representatives to establish comprehensive standards that can be adopted nationwide on a voluntary basis. CDC has also utilized a development process characterized by openness, a balancing of interests, due process, and appeal through public

comment. Second, OMB provides that agencies should not develop their own standards when voluntary consensus standards exist that would be practical for the agency's use. However, OMB Circular A-119 makes clear that every agency has the discretion to decline the use of existing voluntary consensus standards if they are determined to be impractical. At the time CDC began developing the MAHC in 2005 there were no other relevant standards in existence. The subsequent development of the ISPSC has been considered when developing the MAHC and a "Memorandum of Understanding" has been developed and signed with ICC. Yet, even full adoption of the ISPSC should not preclude creation or adoption of the MAHC because the MAHC is more comprehensive and contains significant amounts of content that is not discussed in the ISPSC. It is not in the interest of pool programs to have no input into a code governing design and construction of aquatic facilities since they have to regulate and inspect over the life of the facility. This overlap will and should exist and is in the best interest of health and safety. CDC is dedicated to working with code organizations to minimize code conflicts that exist currently or arise in the future. Third, the support provided by CDC during the development of the MAHC was appropriately limited to that which furthers CDC's public health mission and is consistent with budget resources. According to OMB, agencies may provide financial, administrative, and technical support, participate in joint planning and development, and allow personnel to participate in the voluntary consensus standards process. Therefore, the support provided by CDC in developing the MAHC was both appropriate and encouraged by OMB Circular A-119.

(62) Sarhece Serna, Schlitterbahn, New Braunfels, TX
2 comments

Comment:

6.1.3.1.1--Recognized Courses: Would it suffice to have multiple training courses based on the area of operation as opposed to one course containing all content that falls under 6.1.2.

MAHC Committee Response:

Potentially but we are not aware of any provider doing it that way at this time. To be qualified though would require all to be taken and passed.

Comment:

6.1.3.5--Final Exam: Would it suffice to have multiple training course tests based on the area of operation as opposed to course training test containing all content that falls under 6.1.2

MAHC Committee Response:

Disagree. Potentially but we are not aware of any provider doing it that way at this time. To be qualified though would require all to be taken and passed.

(63) Sonja Ingmanson, Silver Bullet Corp
2 comments

Comment:

4.7.3.2.5.3--Carbon dioxide, ozone and other approved Advanced Oxidation Processes (AOPs) are the only gas feed systems permitted in AQUATIC FACILITIES.
Explanation: Some AOPs generate hydroxyl radicals onsite out of surrounding air, which is bubbled into the water (similar to ozone, but these catalyze the breakdown of ozone to skip the corrosive state). This is safer than some ozone systems that require pure oxygen onsite. -- EPA Alternative Disinfectants and Oxidants Guidance Manual. Chapter 7 Peroxone. Office of Water. April 1999.

MAHC Committee Response:

Disagree. No change at this time. A change such as this needs additional stakeholder input. Recommendations for a code change with supporting documentation should be submitted in advance for consideration at the 2015 CMAHC conference.

Comment:

4.7.3.4.5--Delete this section on UV/Hydrogen Peroxide Systems.

Justification: Advanced Oxidation Processes (AOPs) utilize a combination of UV, Ozone, and/or Hydrogen Peroxide to catalyze the formation of hydroxyl radicals for disinfection. Ozone alone, similarly generates hydroxyl radicals as its disinfection mechanism. It is prudent to allow AOPs and not prohibit the use of a UV/Hydrogen Peroxide AOP, since the process is a highly reactive and efficient form of generating hydroxyl radicals to oxidize contaminants. Prohibiting a technology that represents AOPs, drastically limits pool operator options for a strong oxidizer for secondary and supplemental treatment.

Furthermore, the description for why UV/H2O2 was originally prohibited was phrased to sound like it was analyzing two different treatments and not the catalyzed breakdown of hydrogen peroxide by UV lights in a separate chamber, to form highly reactive hydroxyl radicals for disinfection. -- EPA Alternative Disinfectants and Oxidants Guidance Manual. Chapter 7 Peroxone. Office of Water. April 1999.

MAHC Committee Response:

Disagree. No change at this time. A change such as this needs additional stakeholder input. Recommendations for a code change with supporting documentation should be submitted in advance for consideration at the 2015 CMAHC conference.

(64) Stephanie Schlag, Wisconsin Parks and Rec Association, De Pere, WI
1 comment

Comment:

5.7.6.3--In reference to water clarity – The code is requiring a reference point in the bottom of the pool that is “visible at all times to any point on the deck up to 30 feet away in a direct line of sign from the disc or main drain.”
I may be reading it wrong and I am not exactly sure what the ‘disc’ is but if you are in the deep end, more than likely there will be an apparatus such as slides or diving boards that will prohibit a direct line of sign in certain points on the deck.

MAHC Committee Response:

Disagree. Just needs to be seen from 30 feet if needed, not from every vantage point.

(65) Stephanie Shook, American Red Cross, Washington, D.C.
34 comments

Comment:

4.8.3.2--Recommend to add – swim instruction. Swim instructors teach starting from a block in swim lessons. It reads now like it’s only for swim practice and meets. -- REFERENCE: American Red Cross Swimming and Water Safety program

MAHC Committee Response:

Disagree. The intent is for starting blocks to be only used for swimming competition and training related to swimming competition. Section 4.8.3.2.1 addresses instruction and states "Supervision.
Starting platforms shall only be used under the direct supervision of a coach or instructor."

Comment:

5.12.2.1--Suggest revising to: U.S. Coast Guard-approved life jackets that are of the appropriate size shall be provided free for use by bathers who request them.

MAHC Committee Response:

Agreed, edited.

Comment:

5.6.1.2.1--Recommend to include that the bottom and objects are clearly visible from each lifeguard station. There will be glare from some angles even if the zone can be seen clearly by the lifeguard

MAHC Committee Response:

Agreed. Have added a section to cover.

Comment:

5.8.5.2.2.1--Agree

MAHC Committee Response:

No response necessary.

Comment:

5.8.5.2.2.2 #10--For consistency with future sections, change CPR mask to Resuscitation mask with one-way valve

MAHC Committee Response:

Agreed on consistency. Have changed to CPR mask in other location.

Comment:

5.8.5.3.3--Agree

MAHC Committee Response:

No response necessary.

Comment:

5.8.5.3.4--Agree

MAHC Committee Response:

No response necessary.

Comment:

5.8.5.4.3--Recommend including – updated to latest programs/protocols. I have seen outdated postings that include incorrect information.

MAHC Committee Response:

Agreed, wording edited.

Comment:

5.8.5.4.5--Agree. Suggest adding to end of 2): …providing patron surveillance.

MAHC Committee Response:

Agreed, edited.

Comment:

6.2.1.1.2--Recommend change to #6. Delete "with or without assistance." This allows for all types of extrication. This can be a facility-specific decision and training. Single guarded facilities should have plans for these type situations. -- REFERENCE: American Red Cross Lifeguarding program

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.2.1.2.2--Agree

MAHC Committee Response:

No response necessary.

Comment:

6.2.1.2.5--Recommend change to annex. The national lifeguard course time range listed here is wide at 12 – 36 hours. Suggest change to 20 – 30 or something along those lines. The core courses for lifeguarding vary from at least 20 – 26 hours. There are then modules for specific specialties. The concern is saying 12 could provide "justification" for those that decide to shorten training. Should be the minimum of the range for the standard LG course. -- REFERENCE: National training agencies – Red Cross, Ellis, StarGuard, Nasco

MAHC Committee Response:

Agree. Annex revised.

Comment:

6.2.1.2.6--Agree

MAHC Committee Response:

No response necessary.

Comment:

6.2.1.2.7--Agree overall.

MAHC Committee Response:

No response necessary.

Comment:

6.2.1.2.7 #3--Recommend required use of Adult and Infant CPR manikins since skills of adult and child are so similar while infant skills differ -- American Red Cross Lifeguarding program

MAHC Committee Response:

Agree. Code revised.

Comment:

6.2.1.2.7 #4--For consistency with other sections, change CPR mask to Resuscitation mask with one-way valve

MAHC Committee Response:

Agree. Code revised.

Comment:

6.2.1.3.3--Current CPR/AED certification length for Red Cross is 2 years supported by pre-service and regular in-service training. Since the rationale is that CPR skills degrade in as little time as 3 months, it could be recommended that the certification length is 2 years, with pre-service and regular in-service training in CPR/AED at least quarterly.

MAHC Committee Response:

Disagree. Because of the stated degradation in skill, the MAHC prefers to go with current requirement. This does not change anything to do with the CPR course. You just have to certify each year rather than every two years.

Comment:

6.2.1.3.7--Recommend to change that the lifeguard can complete a challenge program prior to expiration. Since they are expected to finish a renewal course prior to expiring, should be the same for the challenge. Agree that renewal courses are taught by an instructor of the original certifying agency.

MAHC Committee Response:

Agree. Code revised.

Comment:

6.2.2.2--Recommend changing #2. The training candidate should have a valid CPR and first aid training to work but should not be required to hold this certification prior to taking the supervisor training course, nor as a part of the specific supervisory training course. This could

be problematic for course takers of an online course. -- REFERENCE: American Red Cross online Lifeguard Management course

MAHC Committee Response:

Disagree. Should not be problematic for an on-line course. If the training agency does not include CPR/AED and first aid training as part of their curriculum then they would make it as a prerequisite and require submission of the certificate for verification.

Comment:

6.2.2.3.2--Recommend change to make it more clear that online Lifeguard Management courses are acceptable. The way this reads and the way the section flows, no mention of online until the end of the annex. -- REFERENCE: American Red Cross online Lifeguard Management course

MAHC Committee Response:

Disagree. No change necessary in this section.

Comment:

6.2.2.3.3--Recommend to clarify this is for instructors of any in-person courses. Change to say – "Lifeguard Supervisor training courses taught in person… -- REFERENCE: American Red Cross online Lifeguard Management course

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.2.2.3.3.3--Change to indicate that this applies to agencies that have in-person supervisor courses. The way it's written now, dictates all agencies to have this.

MAHC Committee Response:

Disagree. If training agency certifies lifeguard supervisor instructors then there is a need for a renewal process same as there is for lifeguarding and lifeguard instructors.

Comment:

6.3.3.1.1--I agree that quick response times are important for positive outcomes, but think that more is included to determine that. Do not necessarily think 20 seconds is the time but I realize this is a time in the ANSI standard. The Red Cross program says that the size and shape of zones should allow lifeguards to respond quickly, within 30 seconds, to victims in the water."
The total response time for each zone is a consideration. It's great if the lifeguard can get to

the farthest part but the rest of the response – extrication, resuscitation, etc, has to be quick as well. It certainly is one part of it but does not make the zone as it relates to the entire operation safe. -- REFERENCE: American Red Cross Lifeguarding program

MAHC Committee Response:

Partially agree. No change. This section addresses the time the rescuer must reach the furthest extent of the zone (20 seconds), which would include addressing size and shape of each zone, among other factors. It does not include the "recognition phase" in this time.

Comment:

6.3.3.1.2--Agree

MAHC Committee Response:

No change proposed by commenter.

Comment:

6.3.3.3.4

Agree, except prefer 30 seconds -- REFERENCE: American Red Cross Lifeguarding program

MAHC Committee Response:

Disagree. This section addresses the time the rescuer must reach the furthest extent of the zone (20 seconds). It does not include the "recognition phase" in this time.

Comment:

6.3.3.3.6.1--Recommend to say – verify proof of certification. Might not have the certification in hand yet but can be verified by a national training agency -- REFERENCE: American Red Cross

MAHC Committee Response:

Disagree. The lifeguard should be responsible to have a copy of their certification. It is an unnecessary burden on the facility operator or the AHJ to have to verify certification with a national training organization.

Comment:

6.3.3.4.4--Suggest changing 1 to "CPR/AED training is completed and unexpired certificates are on file, with evidence of pre-season and quarterly in-service training documented" -- REFERENCE: American Red Cross Lifeguarding program

MAHC Committee Response:

Disagree. The science shows clearly one year. At this time there is no assurance that any pre-service or in-service training would meet the same objectives as required to gain the certification.

Comment:

6.3.3.4.5--Agree except prefer 30 seconds. -- REFERENCE: American Red Cross Lifeguarding program

MAHC Committee Response:

Disagree. This section addresses the time the rescuer must reach the furthest extent of the zone (20 seconds). It does not include the "recognition phase" in this time.

Comment:

6.3.4.3.1--Recommend change to mean that all the zones being used are staffed. Parts of pools or additional pools within the same venue may not be open during all times during any given day. For example, a leisure pool may not be open during early morning lap swim. The way this is written it implies each zone must be staffed regardless

MAHC Committee Response:

Agree. Code revised.

Comment:

6.3.4.3.5--Agree!

MAHC Committee Response:

No change proposed by commenter.

Comment:

6.3.4.4.2--Clarify this. Is it saying that the lifeguard supervisor is not allowed to go in rotation? What about an indoor pool for early morning lap swim that has 2 stands and 3 lifeguards – one of which is the supervisor. Does this mean that person cannot be in rotation?

MAHC Committee Response:

Agree. Code revised.

Comment:

6.4.1.2.3.4--Delete the reaching pole for this. That is not included in professional lifeguard rescue. -- REFERENCE: American Red cross Lifeguarding program

MAHC Committee Response:

Agreed. Deleted.

Comment:

6.4.1.2.7--Change this to say copies of.

MAHC Committee Response:

Agreed.

Comment:

6.4.2.2.4.3--Change to say reflecting the latest standards.

MAHC Committee Response:

Agreed, edited.

(66) Steve Serna, Schliterbahn, New Braunfels, TX
35 comments

Comment:

4.1.3.2.--Alteration review ; owner planning a non-substantial alteration shall contact the AHJ to review proposed changes prior to starting the N.S.A. Given our way of designing and implementing the plans for building, this would not fit our style of development. Then writing AJH has ability to charge fees for changes.

MAHC Committee Response:

No change proposed by commenter. Proposed alterations can have a significant impact on aspects of an aquatic facility while not exceeding the cost threshold. Preliminary consultation allows for an assessment of potential impact and possible need for plan submittal and approval.

Comment:

4.1.3.3.2--Replacement Approval; 4.1.3.3.3, 4.1.3.3.3.1, 4.1.3.3.4, 4.1.3.3.5
This doesn't fit with our style either, and to have us seek approval for how choose to build.

MAHC Committee Response:

No change proposed by commenter. Proposed alterations can have a significant impact on aspects of an aquatic facility while not exceeding the cost threshold. Preliminary consultation allows for an assessment of potential impact and possible need for plan submittal and approval.

Comment:

4.10.4.3.5--Beach Entry, 4.10.4.3.6 Lazy River, 4.10.4.3.7 Waterslide; minimum shower heads or rinse showers at entrances

Not common practice in any facilities I've been to, this seems a little extreme. Maybe label it as smaller facilities where equipment isn't easily available.

MAHC Committee Response:

Disagree. See Annex for discussion and rationale.

Comment:

4.12.3.2.2--Handholds; wave pools shall be provided with handholds at the static water level or not more than 6 inches above the static water level.

Handholds don't make sense inside a wavepool, where wall edge heights are higher and higher as the depth increases. I've never seen handholds in a wavepool before.

MAHC Committee Response:

Disagree. Code sections 4.12.3.2.2.3 Flush and 4.12.3.2.2.4 Entangled, address safety concerns.

Comment:

4.12.5.2.2--Handholds; a handhold in compliance with MAHC Section 4.5.6 shall be required on at least one side of the lazy river

MAHC 4.5.6 is Handrails, So to have at least one side is that (access point or throughout river). Our rivers don't exactly allow for handholds throughout river.
Handholds in rapids rivers and wave rivers would be extremely hazardous!

MAHC Committee Response:

Disagree. The intent was to have it along the length of the river, either on the inside perimeter, outside perimeter, or both. Because of their generally narrow width, most are in skimmer pools, so the coping +6" above the water level serves this requirement. But there are still many in gutter pools where there is a tiled handhold in front of a gutter.

We defined narrower rivers (less than 8 ft. in width) as current channels. This 8 ft. wide dimension usually determines the minimum clearance for inner tubes to be used somewhat comfortably. There are many "current channels" at municipal indoor rec pools because space is such a premium. There is concern about bathers who venture from one area of a pool into the mouth of a current channel and being caught off-guard by the pace of the current with nothing to grab ahold of. And even if most are shallow enough to stand, some have a velocity that make standing fairly difficult.

Comment:

4.2.1.2.3.1--Permission in writing; permission to use graphics shall be obtained before the graphics are used. Sounds like they want to tell builders how to build their pools.

MAHC Committee Response:

Disagree. Performance criteria are contained in Section 4.2.1.2.3 , Design Parameters. This section addresses written authorization from the AHJ. This is intended to allow for review by the AHJ to determine conformance with the performance criteria prior to installation.

Comment:

4.5.4.1--Accessibility; each pool shall have a minimum of two means of access and egress. Is this post code building or to include alterations

MAHC Committee Response:

No change proposed by commenter. In response to question, Section 4 applies only to new construction or substantial alterations.

Comment:

4.6.2.9.2--Written statement; a written statement of commissioning shall be provided to AF owner to include but is not limited to: 1) 2) 3)
Given our indoor facilities have the technical term of indoors, not sure who does the install of the air system. If in house, should it still require this statement.

MAHC Committee Response:

No change proposed by commenter. In response to the question, yes, per section 4.6.2.9.1: System Commissioning
A qualified, licensed professional shall commission the AIR HANDLING SYSTEM to verify that the installed system is operating properly in accordance with the system design.

Comment:

4.7.1.10--Aquatic Maximum allowable turnover; Lazy Rivers – 2hrs or less
Although defined later that AHJ can offer a variance to the rule, most of these are large volumes of water a lot bigger than most pools, therefore big stretch to request builders to achieve this. Maybe clarify volumes included – not sure we gained much with states being included, for TX-FL-NY- CA had about one venue listed that's attributed to their proposed maximum turnovers.

MAHC Committee Response:

Disagree. No change. As noted, a turnover variance is already addressed in Section 4.7.1.10.3 Turnover Variance. The AHJ may grant a TURNOVER time variance for AQUATIC VENUES with extreme volume or operating conditions based on proper engineering justification.

Comment:

4.7.1.5.4.2--Trimmer valve; each skimmer shall be equipped with a trimmer valve. Does this target new construction only? Should we ask them to clarify, especially if they are discussing manufacturer specific piece of equipment. Most builds have no separation between individual skimmers on suction line.

MAHC Committee Response:

Disagree. Section 4 requirements apply to new or substantially altered construction. The trimmer valve is a component within the skimmer that allows for adjustment of flow.

Comment:

4.8.1.4.3--Carpet ; Carpet and artificial turf shall be prohibited materials for perimeter deck and pool deck Heavily used in NB, not sure if any of our other parks are using. Should allow for options where they require cleaning every so many days to minimize algae and bacteria growth.

MAHC Committee Response:

Disagree. Annex contains the following discussion: Carpet and artificial turf have been found to be inappropriate finish materials for the wettest area immediately around the POOL, i.e. PERIMETER DECK. Although the materials that carpet is manufactured from are durable and do not support mold growth, when they are installed over a relatively impermeable surface, water flows very slowly through the carpet. Soil and CONTAMINANTS entering into the carpet are not easily removed. Since the carpet stays wet longer, and soil and CONTAMINANTS remain in the carpet mold and algae growth is observed. Therefore carpeting is not an acceptable finish material in the wet PERIMETER DECK.
Finish materials for the PERIMETER DECK should not block DECK drains or impair water flowing to DECK drains.
Carpeting can be installed beyond the DECK drains, i.e. DRY DECK.

Comment:

5.7.3.1.3.1--Cyanuric Acid (CYA); CYA or stabilized chlorine products shall not be used for all NC or SubAlt or disinfection equipment replacements after the effective date of the code:
1)spas 2) therapy pools
There is not definitive information listed in annex to support banning this anywhere, only that it would require longer down time should a fecal incident occur. In areas of direct sunlight, the stabilization of chlorine has been a necessity to control cost and usage; the use of dichlor and trichlor products has always been a useful product where delivering bulk chemical product has been an obstacle.

MAHC Committee Response:

Disagree. There is clearly an impact on disinfection when you stabilize. The question is whether it is enough to warrant this change. In therapy pools where you are likely to have

persons with weakened immune responses, we want to maximize disinfectant efficiency which means no stabilizer. Since most of these pools are indoors, there is little argument that a stabilizer is required. The extreme conditions in spas of high organic loads, high bather loads, and high temperatures also increase risk for less than optimal operation and warrants maximizing disinfection efficacy, hence spa inclusion. The need to inhibit biofilm formation makes a stronger argument to not use stabilized forms in this type of venue.

Comment:

5.7.3.2.1.4--Calibrated sensor; shall be calibrated at a frequency in accordance to manufacturer recommendations Where and how would we accomplish this and is it something that operators could perform. There is no explanation where this info is coming from in annex

MAHC Committee Response:

Agreed. Owners will need to consult the manual and the company to get their recommendations. Added wording to annex.

Comment:

5.7.3.2.1.6--Record and store data; UV equipment shall be capable of recording and storing operational data within internal memory in order to meet requirements of the code
I haven't seen many products claiming to provide this feature and there is no reference to this in the annex explaining reasoning.

MAHC Committee Response:

Agreed, section deleted.

Comment:

5.7.3.7.5--Replacement parts – automated controllers; only manufacturer approved OEM replacement parts shall be used.
New proprietary sensors I could see, but ORP and pH sensors are typically interchangeable and will work on other units. Of course a manufacturer wouldn't approve someone else's cheaper probe on their equipment. Should consider clarifying reasoning

MAHC Committee Response:

Disagree. To help ensure the integrity and proper functioning of the equipment, it should be the Manufacturers' purview to address acceptable replacement parts. Non-equivalent parts should not be substituted.

Comment:

5.7.3.7.8--UV systems ; shall be monitored an data recorded at a frequency consistent with MAHC table 5.7.3.7.8

Nothing in the annex explaining this requirement and does this info get delivered by current UV units on the market? Is this specific manufacturers only?

MAHC Committee Response:

Agreed. Clarified this is as a secondary treatment so monitoring is important to ensure it is performing as required. Systems available do have the information listed.

Comment:

5.7.4.1--Sample collection; the qualified operator shall acquire a water sample for testing from the in-line sample port when available.
Suggest changing to “qualified person”, this way it allows the park to train staff to conduct the testing as trained by qualified operator.

MAHC Committee Response:

Agreed. Have altered wording so operator is responsible for getting it done but wording allows for someone else to perform.

Comment:

5.7.4.1.2--No port; if no in-line….. the qualified operator shall acquire…..to MAHC section 5.7.4.3 Suggest changing this from “operator” to “person”, again same reasons as previous comment above

MAHC Committee Response:

Agreed. Have altered wording so operator is responsible for getting it done but wording allows for someone else to perform.

Comment:

5.7.4.3.5--Deepest area; the “qualified operator” shall include the deepest area…….
Suggest changing this from “operator” to “person”, then how excessive is it to reach the deepest area of a facility. Do they realistically expect people to reach this part?

MAHC Committee Response:

Agreed. Wording edited. Sampling rotation can point out circulation problems, etc. that port samples could not.

Comment:

5.7.5.3--Automatic Disinfection feed system; FAC and pH shall be tested prior to opening and every four hours at all aquatic venues using:
Much better value than was previously presented, however currently TX still only requires 1 check per day using an automatic controller feed system.

MAHC Committee Response:

Disagree. MAHC Committee still thinks one has to test more often to know what is really occurring I the pool.

Comment:

5.7.5.4--In-Line ORP readings; Orp readings shall be recorded at the same time the FAC and pH tests are performed. Suggest changing to: If ORP values are available from controller display or in-line sensor, the value shall be included into the logging records. This could eliminate the necessity for facilities financial burden with code implementation.

MAHC Committee Response:

Agreed. Have added "if system is installed". The MAHC givers one year for all facilities to have an automatic controller.

Comment:

5.7.5.9--Water temperature; WT shall be recorded at the same time the FAC or pH tests are performed

Suggest changing to: Water temperature shall be recorded at various times throughout the day when occupied by guest. – given our typical log books, we get this information multiple times during the day anyways.

MAHC Committee Response:

Disagree. Prefer to keep wording so that it is done with another required task or it could be misconstrued to be causing more work.

Comment:

5.7.6.2.1 & 5.7.6.2.2--Clarity Observations and over 10ft deep; marker tile or main drain suction outlet in a contrasting color to the pool surface shall be located at the deepest part of the pool.

If we don't have a drain at the deepest point , this would mean we need to install a single tile. Suggest changing to include: or any reference point which could help determine the increase in turbidity within the pool. Annex says the Secchi disk isn't recommended to help for bather visibility. Our Bahn Boys would provide this reference options.

MAHC Committee Response:

Agreed. Have inserted wording to say In the absence of a marker tile or suction outlet, an alternate means of achieving the goal of observation of bottom of pool may be permitted.

Comment:

5.9.2.2--NSF Standard ; The chemical equipment used in controlling the quality of water shall be certified to NSF/ANSI 50 ……

Does this limit us from using experimental alternatives to controlling water quality? Think about store products that say "Not approved by the FDA to…." We have been known to be innovative and would hate to lose that exploration.

MAHC Committee Response:

Disagree. Not sure exactly what you are suggesting. All equipment such as feeders, controllers, test equipment should be certified to do what it claims or one does not know that it works to any standard. Not clear what experimental alternatives for water quality means.

Comment:

6.1.1.1--Qualifications; A qualified operator shall have completed an operator training course that is recognized by the AHJ.

This could be a double edge sword, but the document does not list any MAHC approved operator courses; it only says AHJ approved. What if the inspector chooses only AFO as their required course and doesn't recognize the others? Suggest listing courses MAHC recognizes as providing adequate content.

This does open the door for conducting our own facility training courses, which could be used to have staff be classified as qualified operators. If the AHJ would approve our course to meet requirements.

MAHC Committee Response:

Disagree but understood. This is ultimately the AHJ decision and they have the right to choose. At some point, the MAHC may take this on but difficult at this time to vet and approve every course offered. The MAHC guidance is intended to help the AHJ choose a course that includes all of the recommended information listed.

Comment:

6.1.3.5.1--Final exam administration; Operator training course providers shall provide final exam administration, proctoring and security procedures including: 1) 2) 3).

2) Final exam completion without assistance or aids that may improve exam results. From an instructor standpoint, this sounds like they would not be able to utilize an open book policy. As we have instructed students over the years to utilize the resources around them, this goes against that. If they are discussing cell phones, web pages, etc. then some clarification is needed.

MAHC Committee Response:

Agreed. Wording edited.

Comment:

6.4.1.2.2 #2--Other inspection items; The qualified operator's other aquatic facility preventative maintenance inspections shall also include: 1) required GFCI devices shall be tested monthly.
Testing these devices could be done by anyone and should not be labeled specific to "qualified operator".

MAHC Committee Response:

Agreed. Already in 6.4.1.2.2.2. since it is monthly rather than daily.

Comment:

6.4.1.2.4--Chemical Inventory Log; CIL shall be maintained on site to provide a list of chemical received, used, and approximate quantities.
Nothing in the annex listing reasons for this but it's not commonly practice as a record to maintain, but only to list as an ordering tool and not always done. We have logged usage throughout the day to see our volumes or tank level from the previous night's closing check.

MAHC Committee Response:

Agreed. Wording edited to clarify intent.

Comment:

6.4.1.2.5--Daily water monitoring and testing records; Daily monitoring and testing records shall include, but not limited to the following:
3) If used, cyanuric acid levels, - need to include "when measured"
7) calcium hardness, 8) total alkalinity, 9) Saturation index, - need to include "when measured"
12) Daily attendance – haven't known for aquatic or pool operator courses to require tracking daily attendance. Nothing in TX code requires that tracking.
14) Evidence of expiration dates being checked on water quality reagents. – I'm not likely to record that I've discarded a reagent due to expiration date.

MAHC Committee Response:

Partially agree, added cyanurate wording. MAHC requires measurement of calcium hardness, total alkalinity, Saturation index. Bather use is needed to plan water replacement.

Comment:

6.4.1.2.8.1--Contamination Incidents; A body fluid contamination response log shall be maintained to document each occurrence of contamination of water or its immediately adjacent areas by formed or diarrheal fecal material, whole stomach discharge of vomit or blood.
Suggest wording; It is recommended to document any BFCR's occurrences of contamination of water or its immediate adjacent areas by ……blood, so it is available for review by AHJ.

MAHC Committee Response:

Disagree. The MAHC feels that this should be required and should not be optional.

Comment:

6.4.1.2.8.3--Required information; log shall include….
2) supervisor on duty – N/A should you have someone qualified conduction the testing.
4) Specific area contaminated by incident – suggest reading "if not located in the pool water"

MAHC Committee Response:

Partially agree. Need to know who was in charge of water quality. Added wording on location of contamination.

Comment:

6.4.2.2.4.3--Posters; CPR and RWI prevention posters shall be posted conspicuously in the aquatic facility at all times.
The question is location. Maybe revise to say, "aquatic facilities must make this information available to its patrons in the best possible manner to minimize risks of both activities."

MAHC Committee Response:

Disagree. Seems overly complex. Conspicuous should cover this.

Comment:

6.4.2.2.7--Hygiene facility signage; Signage shall be posted at the HF exit used to access; Suggest adding an 8th line: 8) Wash hands before returning to the pool

MAHC Committee Response:

Agreed; added.

Comment:

6.4.2.4.2--2 Post inspection score; The permit to operate and the results of the most recent AHJ inspection of the facility shall be posted for public view at the aquatic facility
It will already public record should an AHJ document, I could see from a food inspection our grade being posted, but it's not expected to consume aquatic water.

MAHC Committee Response:

Disagree. The public should have the ability to see the level of operation (just like at a restaurant) and make a choice about usage.

Comment:

6.6.1.2--Inspection scope; Upon presenting proper identification, an authorized employee…..for the purpose of inspecting the aquatic venue or aquatic features to do any of the following: 1) – 6)

Here I believe there should be something listing that an AHJ should be required to give the facility immediate feedback on the results of the inspection, to include measuring and testing equipment deemed acceptable by the facility. – leaving the premises with samples to be tested elsewhere leaves room for errors to occur that could result in unnecessary closure if not properly labeled or recorded.

MAHC Committee Response:

Agreed. This needs to be addressed in guidance to the regulator that will be coming for public comment again in 2014 (portions removed from the regulatory module that spoke to regulatory programs).

(67) Tammie Bettinger, Wisconsin Parks and Rec Association, Franklin, WI
5 comments

Comment:

6.2.1.1.2--The American Red Cross Lifeguard Training program does not include one person removal from the water in their program. This is the training program used by our department.

MAHC Committee Response:

Partially agree. Code revised.

Comment:

6.2.1.2.7--The American Red Cross Lifeguard Training Program does not require facilities to have child manikins available during training. An adult manikin can be used for both the adult and child skills. Many of the facilities in our area do not have the budget to provide the adult and child manikins during training.

MAHC Committee Response:

Disagree. The American Red Cross training program does require adult and infant manikins. This is not a facility issue but a training issue, and the main accredited agencies in this field require manikins for certification and recertification.

Comment:

6.2.1.2.7--Many facilities do not have the storage space or the budget to purchase both an adult and a pediatric bag valve mask.

MAHC Committee Response:

Disagree. This is for training purposes and is not a facility- based requirement. It is needed for training and costs less than $20.

Comment:

6.2.1.3.2--Not all students will have a government-issued photo identification available for an instructor to check. How are we supposed to comply with this rule if they do not have one?

MAHC Committee Response:

Agree. Code revised.

Comment:

6.2.1.3.5--The American Red Cross Lifeguard Training program certification has a validation period of two years for Lifeguarding, First Aid and CPR/AED. This is the training program used by our department.

MAHC Committee Response:

Disagree. Because of the stated degradation in skill, the MAHC prefers to go with current requirement. This does not change anything to do with the CPR course. You just have to certify each year rather than every two years.

(68) Teresa Swanson, Hach Company, Elkhart, IN
2 comments

Comment:

4.7.3.5--Paragraph 2: The use of determining results by means of color and intensity should not be deemed 'highly' subjective. Determining end point titrations with a color change, as is the case of many titration based kits available for pool and spa users can be also be subjective. Visual color comparisons on test kits have been used in the medical industry for years as an adequate and suitable form of measurement. It is recommended that any test kit be selected with the needed test sensitivity, test specificity, and user training needs in mind.

The current, common means of testing POOLS using visual colorimetric test kits can be is highly subjective because the color and intensity must be compared. The design and quality of the test kit along with the good color acuity of most people combine to produce accurate results. It is recommended that any test kit be selected with the needed test sensitivity, test specificity, and user training needs in mind. A review of the color block separation, levels and range can be useful in the selection.
-- REFERENCE: article published in Service Industry News April 2010, "How Our Eyes Recognize Color"

MAHC Committee Response:

Agreed. Annex comment. Annex revised.

Comment:

5.7.3.1.3.1--Paragraph about Research: The current statement is not true as written; there are some pool side test kits on the market today that can measure cyanuric acid from 0ppm to 300ppm.

The current products on the market can vary in accuracy and range. are not very accurate and cannot read values lower than 30 PPM (MG/L) and higher than 100 PPM (MG/L). It is recommended to employ a test kit with the widest range possible, such as 0 to 300 ppm. During RWI outbreaks, it is strongly recommended that the investigation team measure CYA levels. -- AquaChek Silver would be an example of a product that can measure cyanuric acid levels from 0 to 300ppm

MAHC Committee Response:

Agreed. Have deleted some wording but the intent is the same which is to improve on currently available tests

(69) Terri Olivo, Wisconsin Parks and Rec Association, Hartford, WI
2 comments

Comment:

6.3.3.4.4--Maintain Certificates LG
The designated person(s) with CPR/AED and First Aid training shall maintain certifications to show the following:
1) CPR/AED training is completed annually and certificates are unexpired, and
2) First Aid training certificates are unexpired

MAHC Committee Response:

No apparent change proposed by commenter.

Comment:

6.3.4.5--Competency Demonstrate
1) CPR/AED certifications are two years with ARC
2) First aid certifications are two years with ARC

MAHC Committee Response:

Disagree. Annex explains why the MAHC feels it is best to have re-certification on CPR annually. First aid is a max of 2 years.

(70) Thomas Kuechler, Occidental Chemical Corporation, Sauget, IL
28 comments

Comment:

4.1.2.3.5.1 ANNEX--The rationale for the BATHER density numbers factors for specific AQUATIC VENUE types is as follows:
1. …
a. …
b. The density factor was established at 20 ft2per person. …
c. … There was a need to account for higher density factor in shallow areas where …
2. …
a. …
b. The density factor was established at 15 ft2 per person. …
3. …
a. …
b. The density factor was established at 10 ft2 per person. .... -- The use of “density” is confusing here, since the values given (in ft2 per person) are actually the reciprocal of density. The Code (in 4.1.2.3.5.1) uses the term “density factor” and the same term should be used in the Annex.

MAHC Committee Response:

Agree. Annex revised.

Comment:

4.12.5 ANNEX--4.12.5 ~~Leisure~~ Lazy Rivers

MAHC Committee Response:

Agree. Annex revised.

Comment:

4.12.6.5.1--A floor depth indicator shall be provided that displays the ~~CURRENT~~ current POOL water depth. -- The discussion here is not about a "CURRENT POOL" as defined in 3.0.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.3.2 ANNEX--In-line Electrolytic Chlorinator
At the release date of this current version of the MAHC, NSF/ ANSI Standard 50 - 2010, UL 1081, CSA C22, United States National Electrical Code NFPA- 70 (2008) and Canadian PMRA are the current versions of the applicable STANDARDS for in-line electrolytic chlorinators.

Brine Batch Electrolytic Chlorine or Bromine Generator
At the release date of this current version of the MAHC, NSF/ ANSI Standard 50 - 2010, UL 1081, CSA C22, United States National Electrical Code NFPA- 70 (2008) and Canadian PMRA are the current versions of the applicable STANDARDS for brine batch electrolytic CHLORINE or bromine generators.

Copper/Silver and Copper Ion Generator
At the release date of this current version of the MAHC, NSF/ ANSI Standard 50 - 2010, UL 1081, CSA C22, United States National Electrical Code NFPA- 70 (2008) and Canadian PMRA are the current versions of the applicable STANDARDS for copper/ silver and copper ion generators. -- In all three paragraphs, "Canadian PMRA" is cited as a STANDARD. However, Canadian PMRA is the Canadian agency for pesticide registrations. The specific document which is the STANDARD should be referenced.

MAHC Committee Response:

No change made. The PMRA is similar to NSF in that it registers compliant "pesticides" following a science-based evaluation.

Comment:

4.7.3.2.5.6 ANNEX--~~4.7.3.2.5.6 UV Systems~~
~~All UV units shall be installed into the system by means of a bypass pipe to allow maintenance on the UV unit while the POOL is in operation.~~
—This is code language and should not be in the Annex. A similar sentence is in the Code at 4.7.3.2.5.6.1.

MAHC Committee Response:

Disagree. The Annex provides explanations and rationale.

Comment:

4.7.3.2.5.6.3--4.7.3.2.5.6.3 Strainer R&F
An inline strainer shall be installed after the UV unit to capture broken lamp glass or sleeves. -- Repetitive with CODE 4.7.3.3.3.3.2 Strainer Installation.

MAHC Committee Response:

Agree. Code revised to eliminate duplication.

Comment:

4.7.3.3.1.2--2) ~~Therapy~~ THERAPY POOLS -- " THERAPY POOLS" is a defined term (page 69) and should be written as all CAPS

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.2.5--Q = V x ((14.8 – ln (V))} / (60 x T))
Q = V x (14.8 – ln (V)) / (60 x T)
-- Parentheses are not balanced in this equation.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.2.7--Where a SECONDARY DISINFECTION SYSTEM is installed, a means shall be installed to confirm the required flow rate to maintain a minimum 3 log (99.9%) reduction of infective *Cryptosporidium* OOCYST at the minimum flow rate ~~as prescribed above~~. -- Sentence was not complete. The last three words are not needed.

MAHC Committee Response:

Agree. Code revised.

Comment:

4.7.3.3.4.6--The ozone generating equipment shall be designed, sized, and controlled utilizing an ORP (OXIDATION ~~reduction potential~~ REDUCTION POTENTIAL) monitor / controller (independent of and in addition to any halogen ORP monitor/controller). -- " OXIDATION REDUCTION POTENTIAL" is a defined term (page 65) and should be written as all CAPS

MAHC Committee Response:

Agree. Code revised.

Comment:

5.7.3.1.2.2 ANNEX--Bromamines DWQ

CURRENT Current POOL and SPA operating manuals state that combined bromine (bromamines)
is as efficacious as free bromine. -- The discussion here is not about a "CURRENT POOL" as defined in 3.0.

MAHC Committee Response:

Agreed, small caps used inadvertently.

Comment:

5.7.3.1.3.1--2) Therapy THERAPY POOLS -- " THERAPY POOLS" is a defined term (page 69) and should be written as all CAPS

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.1.3.1 ANNEX--The level of cyanurate stabilized CHLORINE allowed in outdoor AQUATIC VENUES is double that for nonstabilized CHLORINE, which is a SAFETY factor for the decrease in oxidative capacity.
…
Indoor Pools
However, since the level of cyanurate stabilized CHLORINE allowed in outdoor AQUATIC VENUES is double that for non-stabilized CHLORINE which is a SAFETY factor for the decrease in oxidative capacity.
-- The discussion is comparing stabilized versus nonstabilized chlorine. The word “since” should be deleted.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.1.3.1 ANNEX--Toxicity
The maximum CYA concentration of ~~50~~ 100 ppm (MG/L) should be considered protective from a toxicological perspective. -- The CYA limit has been changed to 100 ppm elsewhere in the MAHC.

MAHC Committee Response:

Agreed. Edited.

Comment:

5.7.3.2 ANNEX--In one of the largest outbreaks reported, approximately 2,300 persons developed cryptosporidiosis following exposure to a New York spray park. The environmental investigation revealed that filtration and DISINFECTION of the recycled water <u>were not</u> sufficient to protect the PATRONS from this disease. -- The current text is incorrect and thus does not make the intended point.

MAHC Committee Response:

Agreed, edited.

Comment:

5.7.3.3 ANNEX--The MAHC has opted to not include lists of disinfectants that should not be used in AQUATIC VENUES vs. just saying that they must not pose a hazardous issue with the CHLORINE or bromine disinfectants in use and that all water quality criteria must be met. In addition, all disinfectants must be properly registered under by the U.S. EPA under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). -- The MAHC requires proper registration of all disinfectants in other sections (such as Code 4.7.3.4.4.1 and 5.7.3.1.1.1).

MAHC Committee Response:

Agreed, edited.

Comment:

6.1.2.1.1.4--6) Stabilized products (sodium dichloro-s-triazinetrione and sodium trichloro-s-triazinetrione), -- Trichlor is not a sodium salt.

MAHC Committee Response:

Agreed, edited.

Comment:

Glossary--"Breakpoint Chlorination" means the conversion of inorganic chloramine compounds to nitrogen gas by reaction with Free Available Chlorine. When chlorine is added to water containing ammonia (from urine, sweat, or the environment, for example), it initially reacts with the ammonia to form monochloramine ~~chloramines~~. If more chlorine is added, ~~the total residual chlorine continues to rise until the concentration reaches a point that forces the reaction with ammonia to go to rapid completion. In this reaction, the inorganic chloramines are~~ monochloramine is converted into dichloramine, ~~then to nitrogen trichloride, and then~~ which decomposes into nitrogen gas, hydrochloric acid and chlorine. ~~Compounds of nitrogen and chlorine are released into the water, and~~ The ~~the~~ apparent residual chlorine decreases since it is partially reduced to hydrochloric acid. The point at which the drop occurs is referred to as the "breakpoint". The amount of free chlorine that must be added to the water to achieve breakpoint chlorination is approximately ten times the amount of combined chlorine in the water. As additional chlorine is added, all inorganic combined chlorine compounds disappear, resulting in a decrease in eye irritation potential and "chlorine odors." -- Some of this description is chemically incorrect – breakpoint occurs due to the decomposition of dichloramine, not nitrogen trichloride. -- REFERENCE: G. C. White, Handbook of Chlorination, 2nd Edition, 1986, pages 167-181.

MAHC Committee Response:

Agree. Definition revised.

Comment:

Glossary--"Chemical Storage Space" means an interior space of a building used for the storage of pool chemicals ~~including, at a minimum,~~ such as acids, ~~fertilizers,~~ salt, ~~oxidizing cleaning materials, other~~ corrosive or oxidizing chemicals, or pesticides. -- Pool chemicals do not include fertilizers.

MAHC Committee Response:

Agree. Definition revised.

Comment:

Glossary--~~"Run=out slide" means a water slide where the rider does not exit into a plunge pool, but has a deceleration area that permits the patron to stop before exiting the slide flume. --~~ "RUN−OUT SLIDE" is not used anywhere in the CODE or ANNEX.

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--~~"Current pool" means a pool that creates a current for the purpose of exercise. -- "CURRENT POOL" is not used anywhere in the CODE or ANNEX, except incorrectly - see following comments.~~

MAHC Committee Response:

Agreed. Deleted.

Comment:

Glossary--"Water Replenishment System" means a way to remove water from the pool as needed and replace with make-up water ~~shall be provided~~ in order to maintain water quality. -- The draft definition is not proper English.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--"~~Automatic or~~ Robotic Cleaner" -- "AUTOMATIC CLEANER" is not used anywhere in the CODE or ANNEX.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--~~"Oxidation reduction potential"~~ "Oxidation reduction potential" means a measure of the tendency for a solution to either gain or lose electrons; higher (more positive) oxidation reduction potential indicates a more oxidative solution. -- Used in the CODE without a hyphen. Needs added "oxidation" for consistency.

MAHC Committee Response:

Agreed. Edited.

Comment:

Glossary--"Bather Load" means the maximum number of persons allowed in the water of an aquatic venue. Bather load is used to determine the number of RINSE and CLEANSING SHOWERS. Bather Load is not the same as occupant load which refers to maximum aquatic facility loads. The bather load (BL, persons) is calculated by dividing the surface area in ft^2 (aquatic venue surface area) of the aquatic venue by the density factor (D, ft^2/person) that fits the specific aquatic venue being considered (BL = aquatic venue surface area/D). See 4.1.2.3.5 for the density factors ~~are based on defining three types of aquatic venue water: -- The units for BL and D should be defined. The last sentence is incomplete.~~

MAHC Committee Response:

Agreed. Entire definition has been changed.

Comment:

Glossary--"High-risk Venue" means a venue which due to its intrinsic characteristics including intended users, has a greater likelihood of affecting the health and safety of the patrons of that venue. Examples of high-risk aquatic venues include wading pools, spas, and therapy pools.

"Increased Risk Aquatic Venue" means an aquatic venue which due to its intrinsic characteristics and intended users has a greater likelihood of affecting the health and safety of the patrons of that venue by being at increased risk for contamination (e.g., by diaper-aged children/children aged <5 years old) or being used by people that may be more susceptible to infection (e.g., therapy patients with open wounds). Examples of increased-risk aquatic venues include spray pads, wading pools and other aquatic venues designed for diaper-aged children as well as therapy pools. -- The definitions for "High-risk Venue" and "Increased Risk Aquatic Venue" are nearly identical. One of the two should be eliminated. "High-risk Venue" is not used anyway in the draft Code.

MAHC Committee Response:

Agreed. High risk deleted.

Comment:

Glossary--"Lazy River" means a channeled flow of water of near−constant depth in which the water is moved by pumps or other means of propulsion to provide a river−like flow that transports patrons over a defined path. A lazy river may include play features and devices. A lazy leisure river may also be referred to as a leisure river, tubing pool, leisure pool or a current channel.

"Leisure Rivers" means manufactured streams in which the water is moved by pumps or other means of propulsion to provide a river-like flow that transports bathers over a defined path that may include water features and play devices. -- "Lazy River" and "Leisure Rivers" are repetitive. "Leisure River" is not used in the draft Code and should be deleted.

MAHC Committee Response:

Agreed. Leisure river deleted.

Comment:

Glossary--~~"Plunge pool" means a pool with a depth of greater than 24 inches (61 centimeters), located at the exit end of a waterslide flume and intended and designed to receive a patron emerging from the flume.~~ -- "PLUNGE POOL" is not used anywhere in the CODE, except for the definition for "Run-out slide" (see next comment). "PLUNGE POOL" is used in the ANNEX (page 246), but the usage does not agree with the definition in 3.0.

MAHC Committee Response:

Agreed. Plunge pool deleted.

(71) Thomas Lochtefeld, Wave Loch, San Diego, CA
15 comments

Comment:

4.10.1.4--Add (except in surf pools). -- My concern was in the context of subsection 1), namely, some state / local codes use the surface area of the pool as the determinative factor in sizing the number of toilets, urinals and other hygiene fixtures. If the same formula is applied from a conventional pool to a surf pool, then, given the large size of a surf pool this would result in an exceptionally large number of toilet fixtures with no logical nexus to occupant load (this would have significant adverse economic consequence with no improvement in the intended safety of operation). Subsection 2) conceivably could address this issue, except where the occupant load for the state / local jurisdiction is technically calculated by the pool surface area – bringing us back to the same problem reference in subsection 1). Unfortunately, as yet, there are no peer-reviewed scientific studies to support my comments, given that the surf pool technology that we are pioneering has never been done before. Notwithstanding, my company, Wave Loch (see www.waveloch.com) is a pioneer in wave technology, and it would be a shame if

we were unable to develop our new surf pool technology due to governmental regulation that imposes unintended limitations for this class of activity.

MAHC Committee Response:

Partially agree. Surf pools and "Special Use Venues" have been defined and design requirements for "Special Use Venues" (which includes surf pools) has been addressed in section 4.5.

Comment:

4.11.1.1.2--Add (except in surf pools).

MAHC Committee Response:

Disagree. Because there will be bather/surfer contact with the water, water quality must still be adequately addressed.

Comment:

4.12.3.2.1--Add: "This section does not apply to surf pools".

MAHC Committee Response:

Partially agree. Surf pools and "Special Use Venues" have been defined and design requirements for "Special Use Venues" (which includes surf pools) has been addressed in section 4.5.

Comment:

4.2.1.5--Add: "(except in the wave breaking zone of surf pools).

MAHC Committee Response:

Partially agree. Surf pools and "Special Use Venues" have been defined and design requirements for "Special Use Venues" (which includes surf pools) has been addressed in section 4.5.

Comment:

4.5.12.1.2--Add: as a listed exception "surf pools"

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.2.2--Add: (except surf pools)

MAHC Committee Response:

Partially agree. Surf pools and "Special Use Venues" have been defined and design requirements for "Special Use Venues" (which includes surf pools) has been addressed in section 4.5.

Comment:

4.5.2.3--Add: (except surf pools)

MAHC Committee Response:

Partially agree. Surf pools and "Special Use Venues" have been defined and design requirements for "Special Use Venues" (which includes surf pools) has been addressed in section 4.5.

Comment:

4.5.20.5.3--Add: (except in surf pools).

MAHC Committee Response:

Agree. Code revised.

Comment:

4.5.6.4--Add: (except in surf pools)

MAHC Committee Response:

Disagree. Surf pools have now been defined and the code now requires that the design professional provide justification for design parameters that do not meet the design standards and construction requirements listed in Section 4.

Comment:

4.7.1.10--Add: Surf Pools – 12 hours or less

MAHC Committee Response:

Disagree. However, surf pools and "Special Use Venues" have been defined and design requirements for "Special Use Venues"(which includes surf pools) has been addressed in section 4.5.

Comment:

4.8.6.2.3.3--Delete “chain link”

MAHC Committee Response:

Disagree.

Comment:

5.12.2.1--Add: “This section shall not apply to surf pools”.

MAHC Committee Response:

Disagree. As written, this section specifically applies to wave pools only.

Comment:

Glossary--Add a definition for “Surf Pool” means any pool designed to generate waves dedicated to the activity of surfing on a surfboard or analogous surfing device commonly used in the ocean and intended for sport as opposed to general play.

MAHC Committee Response:

Agree. Definition added.

Comment:

Glossary--In the definition of “Aquatic Venue”, add “surf pool”.

MAHC Committee Response:

Agreed.

Comment:

Glossary--In the definition of “Wave Pools”, delete “or surfing”.

MAHC Committee Response:

Agreed.

(72) Tim Shay, New York DOH, Albany NY
1 comment

Comment:

5.7.3.1.1--I recommend including an upper limit for the maximum disinfection levels. A maximum of 10 PPM of free chlorine should be specified as it is an amount that many test kits are capable of measuring..

MAHC Committee Response:

Agreed. Edited and text added to annex.

(73) Tina Dittmar, City of Laguna Niguel, Laguna Niguel, CA
10 comments

Comment:

5.12.7.2--Remove….But at least once every week. -- There is no evidence that a properly filtered, and sanitized spa needs to be drained once a week. ALSO in areas where there are water restrictions (drought) this could be impossible to follow.

MAHC Committee Response:

Agreed. Performance based on water quality criteria.

Comment:

5.6.10.3.2.2--ADDITIONAL language… or cover and secure access designate when use is prohibited -- There is no evidence that leaving removable starting blocks in place, and securing them in the same fashion of 'permanent' starting platforms cause and undue hazard.

MAHC Committee Response:

Disagree. Starting blocks are an attraction for other bathers to use and bathers are known to ignore signs or equipment prohibiting use. The safest approach is to remove them if possible, particularly those at the shallow end. wording added to annex.

Comment:

5.7.1.1.1--Continuous operation: filtration needs to maintain the required turnover rate in order to maintain water clarity, and chemical balance. -- There is no evidence that 24 hour filtration increase the health and safety of the recreational water. The MAHC needs to allow for facilities to 'power down' for short periods in an effort to save energy during nonuse times.

MAHC Committee Response:

Disagree. Shutting off recirculation can lead to loss of disinfectant, pH control, and lead to biofilm proliferation that could impact human health. Have added wording from MAHC 4.7.1.10.6 to describe that the MAHC does allow turndown through a Flow Turndown System.

Comment:

5.8.5.3.8--Change to : ….QUALIFIED LIFEGUARDS ~~shall~~ are recommended to wear polarized sunglasses -- Using language such as 'shall' implies that the MAHC compliant agency will be responsible to provide polarized sunglasses to employees. This is cost prohibitive.

MAHC Committee Response:

Disagree. See annex discussion. Employers are exempted from requirements to pay for sunglasses as personal protective equipment according to OSHA 1910.132(h)(4)(iii) .

Comment:

6.2.1.3.7.2--Delete….#6 -- Requiring a practical exam for a management course is excessive. There are sufficient management training courses currently available to the aquatic profession most are being developed for the online training environment. None of the existing courses require a practical test. MAHC is creating a requirement that does not exist in the industry. Keep in mind… Management consists mostly of knowledge based skills.

MAHC Committee Response:

Disagree. Section 6.2.1.3.7.2 addresses Lifeguard training not Aquatic Supervisor Training.

Comment:

6.2.2.3.3.1--Communicate clearly and concisely, both orally and in writing -- There is no reason to formalize English being the required language. Many facilities need personnel who must be proficient in languages other than English

MAHC Committee Response:

Disagree. The Annex provides the following rationale for this requirement: The requirement of the ability to communicate in English is related to the ability to effectively activate the EMERGENCY ACTION PLAN and deliver instructions as well as interface with emergency services. This is similar to the requirement on airlines for emergency exit row seating.

Comment:

6.3.4.3.2--#8 Should say; if exposed to UV it is encouraged for QUALIFIED LIFEGUARDS to wear sunscreen with an SPF 15 or above and polarized sunglasses. -- The MAHC is implying it is the responsibility of the agency to provide sunscreen and sunglasses to all qualified lifeguards…this is cost prohibitive to most organizations.

MAHC Committee Response:

Disagree. This section addresses responsibilities of the qualified lifeguard.

Comment:

6.3.4.4.1--Delete. -- It is redundant – It is clearly stated in 6.3.4.4.2

MAHC Committee Response:

Disagree. It is not redundant and, it adds clarity.

Comment:

6.3.4.4.1--Should increase the minimum QUALIFIED LIFEGUARDS per zone plan from 2 to 4 -- Establishing a minimum of two lifeguards is as random as one. Requiring a supervisor to be on duty for a facility that has two Qualified Lifeguards on rotation is still too much of a financial burden – AND an overstaffing situation. Fiscally this can be used a reason to shut down small facilities which are already vulnerable.
Also, for facilities who are small will then only schedule one lifeguard to avoid having to have the supervisor, which then puts the one guard on duty at an even great risk, because they will not have brakes from surveillance, or back up during an emergency to assist with a rescue or call 911 (which is part of a safety plan.. Increase the minimum staffing to 4 plus supervisor.

MAHC Committee Response:

Disagree. The Zones of Surveillance dictate pool staffing. The Annex contains a discussion and rationale.

Comment:

6.4.2.4.2--Need to establish a scoring system -- The scoring system needs to be established before the code is adopted. In not having a code system (keep it simple for the public) is will negate much of the justification for the entire reason for a national aquatic health code.

MAHC Committee Response:

Disagree. They need to be able to access results now. Agreed that all AHJ should move to an easily interpretable scoring system that the public can understand.

(74) Tracey Nefford, Schlitterbahn, New Braunfels, TX
6 comments

Comment:

6.3.2--Separate lifeguard training into own section in bullet point 4. “Lifeguard training involves exertion and could result in a bather in distress. If the instructor is focused on an individual, the risk of a different person drowning unnoticed is higher than if a guard on deck was assigned just to class surveillance. A guard on deck may be a qualified lifeguard or a participant in the class that has had vigilance and pool scanning training prior to any bathers entering the pool”

MAHC Committee Response:

Agreed; added additional wording since it applies to all classes.

Comment:

6.3.2--No Recommendation: Comment – All resort or hotel pools will need to verify signage includes that children under the age of 14 are not allowed without an adult.

MAHC Committee Response:

No change recommended. Agreed. Already laid out in signage under MAHC Section 5.8.5.4.5.

Comment:

6.3.2--No Recommendation: Comment – Construction of all resort or hotel pools after adoption of MAHC will need to be less than 5ft at maximum depth.

MAHC Committee Response:

No change recommended. All newly constructed pools over 5ft will require a lifeguard.

Comment:

6.3.3.1.1--No Recommendation: Comment – In order for all qualified lifeguards to understand their exact scope of their zone of patron surveillance we will need to make sure each position has some type of zone reference.

MAHC Committee Response:

Agree with comment. That is the intent for this zone documentation requirement, for education of the lifeguard. The document is the "zone reference".

Comment:

6.3.3.5.1--No Recommendation: Comment – Safety Plan on File will need to be accessible in the park for the facility staff to utilize.

MAHC Committee Response:

No change proposed by commenter. Agree with comment.

Comment:

6.3.4.6--Recommendation: “Remote monitoring systems are an optional additional tool to improve health and safety but are not to replace or substitute for aquatics staff or their duties.”

Comment – MAHC says remote monitoring systems should be used as an additional tool. Justin and I were unsure if the word “should” made it optional or mandatory.

MAHC Committee Response:

Disagree. Annex section does not hold weight of code since it is explanatory, we changed wording to say "may" since the MAHC is not recommending but has to include since the systems are in use. In code section you will see that these are not required (shall).

(75) Tyler Miles, Schlitterbahn, Kansas City, KS
11 comments

Comment:

5.10.4.6.2.1--Omit this section.

MAHC Committee Response:

Disagree. MAHC feels it needs to be specific here to help clarify.

Comment:

5.5.6.1--Does there need to be a separation of defined cracking from pool surfaces to slide flumes, fiberglass, etc.? The monitoring and personnel used to do so is much different, as well as the severity of a crack for different substrate. For instance, a crack on the corner of a de-watering grate from a blaster is much less concerning than on the corner of a river sump.

MAHC Committee Response:

Agreed. We have changed the wording to reflect public health and safety performance criteria requiring (trips, falls, laceration) and moved old wording to annex.

Comment:

6.4.1.1.2--Basic Information including, but not limited too, location of facility attractions, Emergency Action Plans, park communication structure and any other applicable items

MAHC Committee Response:

Agreed. Wording edited. EAP is separate so not folded in here.

Comment:

6.4.1.2.3.2---Add Location of incident and mechanism of injury.

MAHC Committee Response:

Agreed; added.

Comment:

6.4.1.2.8.1--…shall be maintained, as a part of the aquatic venue's disinfection log should the venue desire,… -- REFERENCE: See SB daily disinfection logbook, includes fecal and vomit log

MAHC Committee Response:

Disagree. This an increased risk event and should be required.

Comment:

6.4.2.2.4--Omit Bather Capacity from list.

MAHC Committee Response:

Agree. Replaced with theoretical peak occupancy.

Comment:

6.4.2.2.4.3--CPR Instructional posters? Vague specify use and type of CPR poster

MAHC Committee Response:

Agreed. Adding additional wording.

Comment:

6.4.2.2.7--Regular diapers are not allowed, children must use swim diapers.

MAHC Committee Response:

Disagree. No clear data that swim diapers differ substantially from regular diapers in stopping the spread of illness. Facility can choose to add since "blown" diapers not good for recirc system.

Comment:

6.4.2.4.2--The permit to operate must be posted for public view. The most recent AHJ inspection of the facility shall be readily available upon request.

MAHC Committee Response:

Disagree. To ask the public to request this is essentially making it inaccessible. Needs to be posted just like in restaurants.

Comment:

6.6.4.1--19. Any other item determined to be a public health hazard by the AHJ. Seems very vague and open for interpretation, would feel more comfortable without such a ominous, far reaching ability by AHJ

MAHC Committee Response:

Disagree. This is left for the AHJ to define any other items needed. These would need to be outlined by the AHJ.

Comment:

6.6.5.4--Within 24 hours of notification the hazard has been eliminated…

MAHC Committee Response:

Disagree. Kept at 2 working days; however, code revised to allow AHJ to inspect or accept "other evidence of correction." Code revised to clarify placarding when public health hazards remain uncorrected.