Public Comments and Responses for Risk Management Module Code and Annex After the First 60-day Review Period

Informational Copy: NOT Open for Public Comment

1. Bridgett Bywater, Worlds of Fun / Oceans of Fun (Kansas City, Missouri)

- *COMMENT:*
  4.5.5.2.5. *– A slide run-out in an aqua-play aquatic venue may hold up to six inches of water without necessitating a no-diving sign or depth marker* – Wading pools and water activity features (aqua play) are not required to have depth markings or no diving signage if water depth is 6 inches of water or less.

  CHANGES TO CODE/ANNEX:
  Agreed that 2.5 inches is too shallow and slide runouts should also be included. MAHC changed to not require "No Diving" signage if water is less than 6 inches deep. Wading pools are typically >6 to 24 inches so would recommend that depth of water as the limit.

- *COMMENT:*
  4.6.6.2. *– No need to label every door if they are securely open during operation.* – Unless all gates or doors are so equipped, those gates and/or doors which will allow egress without a key but are typically closed shall be clearly and conspicuously labeled in letter at least 4 inches high "Emergency Exit".

  CHANGES TO CODE/ANNEX:
  Disagree. Doors should not be open to the public. No changes made.

- *COMMENT:*
  4.6.11.1 *– For aquatic venues with licensed emergency personnel on site, calling outside personnel will actually delay appropriate response.* – A telephone capable of dialing 911 to acquire emergency response shall be provided and accessible to all aquatic venue users.

  CHANGES TO CODE/ANNEX:
  Agree. Large facilities with multiple venues may have a large staff trained in emergency response. Added a new MAHC section 4.6.11.1.1 to include the following language: "AQUATIC FACILITIES that have personnel on staff trained to respond to emergency situations shall meet MAHC Section 4.6.11.1 or have alternate procedures in place to initiate their emergency response plan."

- *COMMENT:*
  4.6.11.3. – *To address operators with on-site emergency response not needing address, or sites with multiple venues within the enclosure.* – A sign shall be posted at the telephone providing dialing instructions, address or location of the aquatic venue, and the telephone number.

  CHANGES TO CODE/ANNEX:
  Agreed. Altered code language.

- *COMMENT:*
  4.8.1. – *4.8 is "Decks and Equipment" and 5.8 is "Spectator Areas (Decks)". This is confusing when referencing 4.8.1.2.2 versus 5.8.1.2.2 when determining deck surface requirements.* – Aquatic Venue Surfaces and Equipment.

  CHANGES TO CODE/ANNEX:
  Agree. Have reorganized the section for clarity.

- *COMMENT:*
  6.1.1 – *If the maintenance staff consists of one person, and that person is responsible for maintenance of the procedures, then who is to train them? CPO classes are only required every 5 years. Perhaps annual "training" is excessive, but annual procedural review is appropriate.* – All recreational water facility operators, maintenance staff, lifeguard staff, or any others who are involved in the storage, use, or handling of chemicals shall receive training prior to access of chemicals, and receive at least an annual review of procedures thereafter.

  CHANGES TO CODE/ANNEX:
  Agree. Modified content.

- *COMMENT:*
  6.1.1.8 – "*other germs" seems too vague.* – Employees assigned to roles which have the potential for an occupational exposure to BBP or RWI shall be trained to recognize and respond to RWI, BBP, and vomit in and around the aquatic venue area.

  CHANGES TO CODE/ANNEX:
  Disagree. We discussed this with public health experts to define exposure but not to be limiting. Left "other germs" in wording but have made some wording changes to clarify that the response is to body fluid spills.

- *COMMENT:*
  6.1.1.9 - *This whole line seems redundant to already existing federal regulations,*

but if we are including it they should know where it is coming from. - Employers shall have an Exposure Control Program for BBP per OSHA 1910.1030.

CHANGES TO CODE/ANNEX:
Agree. Referenced OSHA requirements.

- *COMMENT:*
  6.3.3.1.1 -- *There does not seems to be a reason to keep all of this information in one manual when different levels of staff will have different procedures that they must be trained on.* -- Aquatic facilities shall create and maintain operating procedures manual(s) containing information on the emergency response and communications plan including but not limited to an Emergency Action Plan (EAP), Facility Evacuation Plan, and Inclement Weather Plan.

  CHANGES TO CODE/ANNEX:
  Agreed. Note that the MAHC wording just requires that these procedures be in an Operations Guide. There is flexibility in the physical location so an aquatic facility could have multiple Operation Guides in different locations for different roles.

- *COMMENT:*
  6.3.3.1.3 -- *Why does it have to be at the bottom, why do we care when it was reviewed prior to the last review date?* -- The EAP shall be reviewed with the facility staff and management annually or more frequently as required when changes occur with the most recent date of the review recorded in the EAP.

  CHANGES TO CODE/ANNEX:
  Agreed. Altered wording to not prescribe where the review date should be located.

- *COMMENT:*
  6.3.3.1.5 -- *Why would the EAP need to include all training records?* -- The written EAP shall include training frequency and identify where to find documentation of those who have been trained.

  CHANGES TO CODE/ANNEX:
  Agree. Changed content to, “Documentation from employees trained in current EAP shall be available upon request.”

- *COMMENT:*
  6.3.3.3.2 -- *Since a burst blister is an open wound, it seems this might be too limiting without allowing for the guidance of a trained medical physician.* --

Operators shall not permit employees with open wounds in the water or in a lifeguard role without physician approval.

CHANGES TO CODE/ANNEX:
Agreed. Have changed the wording to allow for physician approval or wearing "a waterproof, occlusive bandage to cover the wound." The risk of swimming with open wounds is really to the swimmer who has an entry point for pathogens not other patrons.

- *COMMENT:*
  6.4.2.2.3 -- *1" text is really large, even ADA only requires 5/8 inch if horizontal viewing distance is less than 5'.* -- The lettering shall be legible and at least 5/8 inch high, with a contrasting background (must comply with 703.5.5 of the 2010 ADA Guidelines for Accessible Design).

  CHANGES TO CODE/ANNEX:
  Disagree. This was determined using technical data so that the sign is visible from across the aquatic venue so that only one sign is needed per venue so the 5 ft distance in ADA was deemed inadequate for this purpose.

- *COMMENT:*
  6.4.2.2.4 -- *In multi-venue enclosures this would be a lot of information to place at each aquatic venue.* -- Signs should be placed at the entrance of the aquatic venue enclosure that includes the following information, or text complying with the intent of the following information:

  CHANGES TO CODE/ANNEX:
  Agree. Have allowed the full sign to be posted at the entrance to the multi-venue facility and allow an abbreviated version at each venue.

- *COMMENT:*
  6.4.2.2.4 1) -- *In a waterpark environment, emergency response may be quicker by notifying a staff member than by pulling out a cell phone and dialing 911.* -- In case of emergency : [insert text here]…

  CHANGES TO CODE/ANNEX:
  Agree. Addressed in 4.6.11.1 and wording added to allow changing the sign if such personnel are on site.

- *COMMENT:*
  6.4.2.2.4 2) -- *Including "aquatic facility use prohibited at any other time" seems unnecessary in waterpark environments.* -- Hours of Operations…

CHANGES TO CODE/ANNEX:
Agreed. Added wording to note that this wording is only intended for non-secure facilities such as apartment complexes.

- *COMMENT:*
  6.4.2.2.4 7) -- *Since eye glasses would fall in to this category it seems excessive.* -- OPTIONAL: No glass or shatterable items in the aquatic venue or on the aquatic venue deck.

  CHANGES TO CODE/ANNEX:
  Disagree. This is a common requirement due to the bare feet around a pool deck and to prevent broken glass from getting in the water. To exclude all items such as eye glasses that might be at the facility would require far more words than necessary since this is about intent. Note the MAHC says to use this wording **OR** text complying with the intent so facilities are free to put all the exceptions or change wording if they choose.

- *COMMENT:*
  6.4.2.2.4 8) -- *Excluding all animals is against ADA guidelines.* -- Non-service animals not allowed in the aquatic venue or on the aquatic venue deck.

  CHANGES TO CODE/ANNEX:
  Agreed. Have added wording indicating the deck is open to service animals.

- *COMMENT:*
  6.4.2.2.6 1) -- *Not sure we can take the risk of a parent telling us that the doctor said it was okay for their infant to be in a 104 degree spa.* -- Small children are not allowed in the spa aquatic venue.

  CHANGES TO CODE/ANNEX:
  Agreed. Signage wording has been altered and wording added to the annex.

- *COMMENT:*
  6.4.2.2.7 -- *Facilities should have the ability to present this information in whatever way they find more appropriate for the type of patron attending their facility.* -- Signage shall be posted at hygiene facility exit used to access aquatic venues stating or containing text that complies with the intent of the following:

  CHANGES TO CODE/ANNEX:
  Agree. Changed as suggested so that facilities just have to comply with the intent.

2. Richard Carroll, Jeff Ellis & Associates, Inc. (Ocoee, FL)

- *COMMENT:*
  4.5.5.1.1 -- *Not sufficient guidance*. -- Need to define what constitutes a water depth change. For example a 1 foot depth increase.

  CHANGES TO CODE/ANNEX:
  See MAHC Design and Construction Guidance for depth markers. The MAHC does not believe this language needs to be more specific.

- *COMMENT:*
  4.5.5.1.3 -- *Not sufficient guidance.* -- Need to define what constitutes a slope break.

  CHANGES TO CODE/ANNEX:
  MAHC Facility Design and Construction defines "slope break" at 5 feet.

- *COMMENT:*
  4.5.5.1.7 -- *Best practice.* -- Recommend that max depth markers be located on venue deck at entrance as well as on the entrance sign. Also this should NOT include Wave pools (which could be considered restricted access) due to the safety factor for swimmer to view water depth as wave pool.

  CHANGES TO CODE/ANNEX:
  Disagree. Depth markers are required at specified intervals for bodies of water so they are visible from inside the venue. Controlled access venues are treated differently in MAHC 4.5.5.1.7

- *COMMENT:*
  4.5.5.2.8.2 -- *Not practical.* -- It is hard to believe that there are facilities that ONLY are used for competitive diving. This should be removed

  CHANGES TO CODE/ANNEX:
  Agreed. This section has been deleted.

- *COMMENT:*
  4.6.1.1.1 -- *General Statement that presents an operator exposure.* -- While this is a fine general statement the fact remains that if glare impedes lifeguards ability to view the zone of pool bottom or both then by definition the zone is not meeting

draft code. Suggest this be removed

CHANGES TO CODE/ANNEX:
Agree. Glare content modified and relocated to the annex.

- *COMMENT:*
  4.6.1.2.3 -- *Liability exposure/objective based language.* -- Remove "without blind spots". Blind spots should not be defined or reference as the mere presence of such an occlusion is an exposure. Keep this objective and remove words after Aquatic venue

  CHANGES TO CODE/ANNEX:
  Agree. Replaced "blind spots" with "glare" and added, "…which can block visibility to the pool floor." Also, this content was moved to the annex as a recommendation to inspect for, be aware of, and how to avoid glare.

- *COMMENT:*
  4.6.6.1 -- *Mixed order of terms.* -- Should read aquatic venue enclosure's emergency exit(s)...

  CHANGES TO CODE/ANNEX:
  Agreed. Language changed to read, " The AQUATIC VENUE emergency exit(s) shall not be blocked by objects or secured in a manner that prevents patrons from exiting in the event of an emergency."

- *COMMENT:*
  4.6.11.1 -- *consistency* -- section 4.8.5.2.4 states A telephone or communication device that is hard wired and capable of directly dialing 911 or other emergency notification system shall be provided and accessible to all aquatic venue users. the term hard-wired needs added to be consistent OR remove hard wired from 4.8.5.2.4

  CHANGES TO CODE/ANNEX:
  Agree. Reworded and added 4.6.11.1.

- *COMMENT:*
  4.6.11.3 -- *Choose an item.* -- Should be consistent with section 4.6.5.2

  CHANGES TO CODE/ANNEX:
  Agreed. Will reconcile with lifeguarding 4.6.5.2 when modules are merged

- *COMMENT:*
  4.9.1.1 -- *Outdoor Storage Areas.* -- All chemical Storage areas shall meet local building codes and / or fire Codes

  CHANGES TO CODE/ANNEX:
  *Agreed. Changed language to state "*All chemical STORAGE areas shall meet applicable local building and fire CODES."

- *COMMENT:*
  5.9.1 -- *Clearer definitions needed.* -- "Storage" means the condition of remaining in one space for one hour or more. Chemical storage area needs defined further or are they considering anywhere a "chemical" is "stored" as being a chemical storage area? Also need to define "Chemical" somewhere so it is clear what they are talking about here. Almost everything is considered a chemical by definition and many items have MSDS sheets and official chemical listings in registries...

  CHANGES TO CODE/ANNEX:
  Disagree. Content is specific.

- *COMMENT:*
  5.9.1.7 -- *Clarification.* -- Are pool heaters exempt from the "storage of ignition sources"?

  CHANGES TO CODE/ANNEX:
  Agree. A pool heater could be an ignition source if it is gas powered and can ignite a flame. Have added additional wording to clarify.

- *COMMENT:*
  5.9.1.13 -- *Clarification.* -- Clarification on single container size and volume limitations if any.

  CHANGES TO CODE/ANNEX:
  Disagree. The MAHC does not think that this level of detail is warranted.

- *COMMENT:*
  5.9.1.13.1 -- *Clear definition.* -- How is "small" defined

  CHANGES TO CODE/ANNEX:
  The MAHC does not think that this level of detail is warranted.

- *COMMENT:*
  5.9.2.1 -- *Consistency.* -- should be labeled according to materials labeling

requirements (OSHA)

CHANGES TO CODE/ANNEX:
Agreed. Wording added.

- *COMMENT:*
  5.9.2.2 -- *Consistency.* -- should be labeled according to materials labeling requirements (OSHA)

  CHANGES TO CODE/ANNEX:
  Think this is referring to 5.9.2.1.1. Wording has been added

- *COMMENT:*
  6.3.3.1. to 6.3.3.1.6 -- *Common sense.* -- Lifeguard & Bather supervision also uses similar terms ... need to be clear that we define EAP's by area. For example "Aquatic" EAP's or Maintenance EAP's. If not there will be major redundancies

  CHANGES TO CODE/ANNEX:
  Agreed. As the MAHC modules are knitted together these redundancies will be consolidated, reconciled or removed.

- *COMMENT:*
  6.3.3.1.6.1 -- *Current Requirement.* -- Chemical storage and EAP/evacuation info also must be filed with local fire/hazmat agency according to quantities and chemical types stored. **Reference**: EPA's "EPCRA Sections 311-312 (40 CFR 300) ...

  CHANGES TO CODE/ANNEX:
  Agree. This content was removed and added to the annex.

- *COMMENT:*
  6.3.3.1.7.1 -- *Redundancy.* -- Check for redundancies with Lifeguard Bather Supervision module

  CHANGES TO CODE/ANNEX:
  Agreed. As the MAHC modules are knitted together these redundancies will be consolidated, reconciled or removed.

- *COMMENT:*
  6.3.3.2.1 -- *Liability exposure.*-- Remove references to blind spots... operation exposure that should be eliminated by definition

CHANGES TO CODE/ANNEX:
Agree. This content was moved to the annex as a recommendation of how to inspect for, be aware of, and avoid glare. Also, replaced "blind spots" with "glare" and added, "…which can block visibility to the pool floor."

- *COMMENT:*
  6.3.3.2.4 -- *Lack of definition.* -- Define "conditions". This is a bad term... suggest delete all language after the word lifeguard

  CHANGES TO CODE/ANNEX:
  Agree. Removed code language and placed in annex. Changed code to read, "…shall not replace the need for lifeguards."

- *COMMENT:*
  6.3.3.3.1 and 6.3.3.3.2 -- *Too restrictive. Keep objective not subjective.* -- Why would the lifeguard not be permitted to work in a "dry" position such as slide dispatch?

  CHANGES TO CODE/ANNEX:
  Agree partially. Employees with diarrhea should not be in positions where they may have to get in the water the same as food employees shouldn't be making food if ill with diarrhea. Wound infection wording amended to allow physician approval or the use of a waterproof occlusive bandage since risk is to the employee with a wound/entry point for pathogens.

- *COMMENT:*
  6.4.2.1.1 -- *Definition/clear objective.* -- If this refers to lifeguard staffing then it should be removed. Staffing is not based upon occupancy but rather zone assignment.

  CHANGES TO CODE/ANNEX:
  This is bather load specific issues. This statement is asking the facility to make necessary changes which could include water chemistry monitoring, additional staffing, etc that would be bather load specific. No change.

- *COMMENT:*
  6.4.2.2.4 -- *Common sense.* -- Bather load not practical for a large/multiple facility operation. The whole sign could be dedicated to individual bather capacity. For whose purpose? Stick to rules that make sense for users and not for regulatory needs.

CHANGES TO CODE/ANNEX:
Disagree. Bather capacity is per venue and should be posted to prevent overcrowding as is done in building code.

- *COMMENT:*
  6.4.2.2.4 -- *Clarification.* -- Hours of Operation on each venue sign at a multiple venue facility would be tedious, especially due to time changes. Identify where patrons can go to find the operating hours, or keep a blanket, "Venue use is prohibited during hours of non-operation"

  CHANGES TO CODE/ANNEX:
  Agree. Added content to allow for flexibility on posted content (includes the following information or text complying with the intent of the following information). The hours of operation relate to non-secure facilities like an apartment complex.

3. Steven Chevalier, Tri-County Health Department (Commerce City, CO)

- *COMMENT:*
  4.5.5.1.2.1 – *Editoria*l -- Symmetrical AQUATIC VENUE designs with the deep point at the center may be allowed provided a dual marking system **~~is used~~** which indicates the depth at the wall and at the deep point.

  CHANGES TO CODE/ANNEX:
  Language was changed to: "Symmetrical AQUATIC VENUE designs with the deep point at the center may be allowed by providing a dual marking system which indicates the depth at the wall and at the deep point."

- *COMMENT:*
  4.5.5.2.2 – Editorial -- Depth markers shall be slip resistant **for depth markers** on walking surfaces.

  CHANGES TO CODE/ANNEX:
  Agreed. Language was changed to "Depth markers on walking surfaces shall be slip resistant."

- *COMMENT:*
  4.5.5.2.7.1 – Editorial -- Symbols for feet (') and inches (") shall not be permitted on water **depths (DEPTH)** signs to avoid confusion.

CHANGES TO CODE/ANNEX:
Agreed. Changed as suggested.

- *COMMENT:*
  4.6.1.1.1 – *Editorial* -- Glare from artificial light that interferes with the lifeguard's view of the swimmers shall be avoided. ***Will this section be repeated in 4.6.1.6?***

  CHANGES TO CODE/ANNEX:
  Agree. Glare content modified and relocated to the annex.

- *COMMENT:*
  4.6.1.2.1 – *Editorial* **--** Artificial lighting shall be provided at all swimming AQUATIC VENUEs which are to be used at night or which do not have adequate natural lighting. ***Does adequate lighting refer to the next section: that it should illuminate all parts of the AQUATIC VENUE floor? This is too subjective.***

  CHANGES TO CODE/ANNEX:
  Yes, the adequate lighting is covered in the next section as a performance measure--- Lighting shall illuminate all parts of the bottom of the AQUATIC VENUE to enable a lifeguard or other person to determine whether a BATHER is on the bottom of the AQUATIC VENUE.

- *COMMENT:*
  4.6.1.2.2 – *Editorial* -- Lighting shall illuminate all parts of the AQUATIC VENUE floor to enable a lifeguard or other person to determine whether a BATHER is ~~**lying**~~ on the bottom of the VENUE.

  CHANGES TO CODE/ANNEX:
  Agreed. Deleted word

- *COMMENT:*
  4.6.1.2.3 – *Editorial* -- Lighting shall provide complete illumination to all underwater areas of the AQUATIC VENUE without blind spots. ***What is a blind spot? This needs to be defined or termed in a way that is not subjective.***

  CHANGES TO CODE/ANNEX:
  Agree. Replaced "blind spots" with "glare" and added, "…which can block visibility to the pool floor." Also, this content was moved to the annex as a recommendation to inspect for, be aware of, and how to avoid glare.

- *COMMENT:*
  4.6.1.3.2 – *Editorial* -- Underwater lighting shall fully illuminate the AQUATIC VENUE bottom and drains. ***Should this say AQUATIC VENUE floor rather than bottom to be consistent with 4.6.1.2.2?***

  CHANGES TO CODE/ANNEX:
  Agreed. Using floor where appropriate.

- *COMMENT:*
  4.6.6.1 – *Editorial* -- The AQUATIC VENUE emergency exit ~~enclosure~~ shall not be blocked by objects or secured in a manner that prevents patrons from exiting in the event of an emergency.

  CHANGES TO CODE/ANNEX:
  Agreed. Language changed to read, "The AQUATIC VENUE emergency exit(s) shall not be blocked by objects or secured in a manner that prevents patrons from exiting in the event of an emergency."

- *COMMENT:*
  4.8.1.2.2 – *existing state or local codes* -- All walking surfaces in the AQUATIC VENUE area shall have a textured surface which is not conducive to slipping under contact of bare feet in wet or dry conditions. ***The textured surface on the deck areas should allow for proper drainage of water on the deck to deck drains.*** – ***Reference:*** DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT/ Water Quality Control Division / 5 CCR 1003-5 / STATE BOARD OF HEALTH / REGULATIONS PERTAINING TO SWIMMING POOLS AND MINERAL BATHS

  CHANGES TO CODE/ANNEX:
  Agreed. Drainage is covered in Design and Construction. As the MAHC modules are knitted together these overlap areas will be consolidated, reconciled or removed.

- *COMMENT:*
  4.8.1.2.3 – Editorial -- The walking surface shall not be rough so as to cause injury or discomfort to BATHERs. ***Discomfort is subjective***.

  CHANGES TO CODE/ANNEX:
  Agree; moved this section to the annex as a suggestion or tip. This was also addressed in an above comment.

- *COMMENT:*
  4.9.1.3 – Editorial -- The ventilation system for the chemical STORAGE area and pump room shall be designed so that the rooms are ventilated to the outside with air flow directed away from public access areas. ***Is there a requirement for chemical storage rooms as to how many cubic feet of air per second has to be turned over?***

  CHANGES TO CODE/ANNEX:
  Design and Construction 4.9.2.5.2.2.1addresses how this requirement should be met.

- *COMMENT:*
  4.9.1.4 – Editorial- The chemical feed system shall be designed so that the CHLORINE and PH feed pumps will be deactivated when there is no flow in the recirculation system. ***Should this be inclusive for all chemical feed pumps?***

  CHANGES TO CODE/ANNEX:
  Agree. Modified content is inclusive by replacing “chlorine” with “chemical feed pumps.” Also added “no **or low** flow” since the chemical mixing injuries that occur in these instances can be due to low flow as well as no flow scenarios.

4. Jim Dingman, Underwriters Laboratories (Northbrook, IL)

- *COMMENT:*
  4.9.1.1.1 -- *The vast majority of jurisdictions use the International Building Code instead of NFPA 5000. Referencing the applicable section of the IBC is necessary.* -- In the absence of local CODEs, all chemical STORAGE areas shall meet NFPA 5000: Building Construction and Safety Code requirements, or IBC Section 307. -- ***Reference***: IBC Section 307

  CHANGES TO CODE/ANNEX:
  Agreed. Added text.

- *COMMENT:*
  4.9.1.6 -- *Would these be required in semi-public facilities (hotels, motels, etc.)? if so … good luck in trying to get them to put them in!* -- Delete entire section.

  CHANGES TO CODE/ANNEX:
  Disagree. This is an OSHA requirement. These can be plumbed or portable but it is required to protect employees.

- *COMMENT:*
  5.8.1.1.1 -- *In many cross connection programs, check valves are not considered adequate devices. It would be better to remove such wording. Also, annual testing is required in many jurisdictions. Requiring such testing is a preventative step in minimizing cross connection incidents.* -- Cross connection devices such as check valves shall be in good working order, and shall be tested as required by the jurisdiction.

  CHANGES TO CODE/ANNEX:
  Agreed. Wording added.

- *COMMENT:*
  5.9.2.3 -- *Certification of products to any standard (NSF, UL, etc.) indicates that the product meets the requirements of the standard. It does not "approve" the product. The correct wording has been provided in the recommendation. Such wording is consistent with wording in other codes.* -- The chemicals used in controlling the quality of water shall be listed to NSF 50, approved and used only in accordance with the manufacturer's instructions.

  CHANGES TO CODE/ANNEX:
  Agree. Changed "approved" to "certified."

5. Gary Fraser, Washington State Department of Health (Olympia, WA)

* WAC means Washington Administrative Code
** RCW means Revised Codes of Washington

- *COMMENT:*
  4.5.5.1 -- *In deeper portions of pools, accounting for the radius construction will provide accurate pool depth, e.g. if working with 10 foot depth and have a springline at 3 feet depth, would need to measure 7 feet out for accurate bottom depth.. If measured 3 feet out, it would record a depth of 8.5 feet and would not have an accurate representative condition of the deepest depth of the pool.* -- After the words: "normal operating water level when measured" 3 feet (1 m) from the Aquatic Venue wall *(add the words)* when pool has minimal wall intrusion with the floor or measured beyond the radius of curvature of coving when representing pool depth with radius coved pool construction. "

  CHANGES TO CODE/ANNEX:
  Agree. Wording added to clarify

- *COMMENT:*
  4.5.5.1.6 -- *Depth marking not readily visible to bathers.* -- Keep current language and add exception: If overflow channels do not allow for placement of vertical wall markings above the water level, they are not required. – **Reference**: WAC 246-260-041(8) (a).(*)

  CHANGES TO CODE/ANNEX:
  Partially agree. The MAHC still wants bathers to see the depth when in the pool. Design and Construction states "4.5.19.1.3. Where depth markings cannot be placed on the vertical wall above the water level, other means shall be used so that the markings will be plainly visible to persons in the pool.

- *COMMENT:*
  4.5.5.2.4 -- *We discussed this issue during one of our rule making sessions and opted to not require depth markings. On larger spa pools, if you do elect to do this, consider including both seat and spa bottom depths.* -- General question on this subsection for spa pools. Is the deepest depth to be provided or both the deep depth and the seat depth to be included on the depth?

  CHANGES TO CODE/ANNEX:
  Disagree. The MAHC feels it is too complicated to also add seat depth. Max depth of basin only.

- *COMMENT:*
  4.6.1.1.1 -- *While I like the intent of this performance standard, I'm concerned of our staff having the ability to determine this. Are you confident necessary training can be passed to plan review staff? Glare or veiling reflections are difficult issues. This seems to assign determination and responsibility to departments.*

  CHANGES TO CODE/ANNEX:
  Agree. Glare content modified and relocated to the annex.

- *COMMENT:*
  4.6.11.2 -- *If it always has to be visible, this may be limiting.* -- Add text at end: "or if phone is not visible, signage clearly provides phone location".

  CHANGES TO CODE/ANNEX:
  Agree. Added content to suggest that location of phone be included.

- *COMMENT:*
  4.8.1.2.1 -- *Consider defining "tripping hazard"* -- I didn't see anything defining

what would constitute a “tripping hazard” but find the notation in the ANNEX for this subsection to be discussing “slip resistance” and not some maximum height difference and/or maximum gap distance between walking surfaces. – **Reference**: WAC 246-260-031(3)(d)

CHANGES TO CODE/ANNEX:
Agree. Content included in annex, “ANSI defines where a trip hazard is considered as a level change that is greater than 1/4 inch. Other definitions include an abrupt or unexpected level change in surfaces.”

- *COMMENT:*
  4.9.1.4 -- *Should this apply to all disinfectants, not just chlorine?* -- Suggest replacing “CHLORINE” with “Disinfectant””

  CHANGES TO CODE/ANNEX:
  Agree. More generic language has been used. We used “chemical feed system” instead of specifying what the system is pumping.

- *COMMENT:*
  5.6.1.3.1 -- While our department has not defined dusk, we have used other state definitions (Motor Vehicle rules) and several states follow a similar definition. It is defined “dusk” as ½ hour after sunset to ½ hour before sunrise or any other time when, due to insufficient light or unfavorable atmospheric conditions, … persons are not clearly discernible . **Reference**: RCW 46.37.020(**)

  CHANGES TO CODE/ANNEX:
  Disagree. We prefer to use the common definition for dusk/dawn exists that sets the time at 30 minutes before sunset and after sunrise and not use the word dusk vs. “night swimming”.

- *COMMENT:*
  6.3.3.2.4 – Suggest adding word “be” between “not” and “a” in this sentence.

  CHANGES TO CODE/ANNEX:
  This section changed to read “Lifeguard-based remote safety monitoring systems shall not replace the need for lifeguards.” This section has also been re-arranged to clarify remote monitoring for bather distress and for water quality measurements.

- *COMMENT:*
  6.4.2.2.4 -- *Supervision is vital to protect against drowning. Our state uses age*

12, data may support different age, but we do need to clearly stipulate responsibility. -- Replace item #9 with: "In facilities that are not guarded, persons under age ?(12?) shall not use pool without adult supervision" – **Reference**: (1)WAC 246-260-131(9)(c); (2)Archives: Pediatric Medicine 200903 –Child Water Safety Advice; (3)Analysis of Drownings Involving Children Aged 5 years and under in NSW.

CHANGES TO CODE/ANNEX:
Agree. Wording altered to "No Lifeguard on Duty: Children under 12 years old must have adult supervision.

6. Rick Fuller, Hyland Hills Park and Recreation District (Denver, CO)

- *COMMENT:*
  4.5.5.2.8.2 -- *Not necessary for this signage where there is no access or access is restricted.*-- Include at end of present sentence "or controlled access AQUATIC VENUES such as an activity pool, lazy river, etc. -- **Reference**: Tracks the language of 4.5.5.1.7; Also required to be on signage as per 6.4.2.2.4

  CHANGES TO CODE/ANNEX:
  Agreed. This section has been deleted since exclusivity for diving is unlikely.

- *COMMENT:*
  4.6.11.5.1 -- *If the aquatic facility is properly staffed there is no need for the public to have direct access to an emergency telephone. This will also reduce occasions for false reports* -- Exception (a): The telephone required by 4.6.11.1 does not need to be accessible to AQUATIC VENUE users where sufficient AQUATIC VENUE non-safety/lifeguard staff are present to make any required emergency communication in a timely manner.

  CHANGES TO CODE/ANNEX:
  Agree. Created MAHC Section 4.6.11.1.1 and added language in annex. The MAHC now addresses the unstaffed venues as well as venues that would have trained emergency responders.

- *COMMENT:*
  4.6.11.5.2 -- *Waterparks typically have trained EMS personnel, supervisors and alternative methods of communication (including cell phones and radios) to deal with emergencies that can effectively take the place of the telephone.* -- Exception (b): The requirements of 4.6.11.2 may be waived for aquatic facilities containing multiple AQUATIC VENUES if adequate alternative means of emergency communication are provided.

CHANGES TO CODE/ANNEX:
Agree. Created MAHC Section 4.6.11.1.1 and added language in annex.

- *COMMENT:*
  6.4.2.2.4 -- *For multi aquatic venue facilities, not all of these rules are should be required to be restated at each venue. Many facilities already ban glass. See above comments on 911 calls, Rule 2 can be posted at the main facility entrance, Rule 4 needs to be reworded, Rules 5 and 6 are already covered under hygiene signs 6.4.2.2.7. Except for service dogs, many facilities do not allow animals at all. We don't want to have so much signage that our guests don't pay attention to any signage.* -- AQUATIC VENUE signs shall have the following included on the sign, **where applicable**:

  CHANGES TO CODE/ANNEX:
  Agree. Included content to allow signage to meet the intent and clarify intent and differences for multi-venue facilities.

- *COMMENT:*
  6.4.2.2.4.1 -- *See above. Also, we don't believe there is a requirement to shower after getting out of one AQUATIC VENUE and getting into an adjacent AQUATIC VENUE. (See 6.4.2.2.4 6))* -- Exception: for facilities containing multiple AQUATIC VENUES, applicable rules set forth in 6.4.2.2.4 need be provided only on facility main entry signage.

  CHANGES TO CODE/ANNEX:
  Agree. Included content to allow signage to meet the intent. Note that new construction will have rinse showers at each venue that we do want bathers to use.

7. Steven Hughes, Department of Public Health (Boston, MA)

- *COMMENT:*
  4.5.5.1.2 -- *No benefit to approximate depth and the actual depth is easy enough to determine* -- Remove reference to "within 3 inches (8cm)"

  CHANGES TO CODE/ANNEX:
  Disagree. The content including "within 3 inches" allows for rainwater, bather load, etc. It is impractical for the water level to be exact at all times.

- *COMMENT:*
  4.5.5.2.4 -- *A 200 square foot spa is too large to exempt from provisions --*

Change to spas less than “100” square feet

CHANGES TO CODE/ANNEX:
Disagree. The MAHC committees agreed that 200 square feet was the cutoff.

- *COMMENT:*
  4.9.1.2 -- *Exhaust @ source and away from breathing zone* -- Add air handling “exhaust vents” in chemical storage areas shall “be located at or near the ground level” and meet…

  CHANGES TO CODE/ANNEX:
  To be discussed further. The MAHC would prefer not getting to specific and will be determining whether this should be left to building code.

- *COMMENT:*
  5.9.2.9 -- *Same benefit for both* -- Add in “pools and” spas.

  CHANGES TO CODE/ANNEX:
  Agree, changed “spa” to aquatic venue to be more inclusive.

- *COMMENT:*
  6.4.1.3.1 -- *An established timeline is warranted* -- Add a timeline for record retention at the end of the provision… “for a minimum of 3 years, unless otherwise established by applicable state or local record retention laws, regulations or guidelines”

  CHANGES TO CODE/ANNEX:
  Agreed. Maintenance and Operation has set the time at 3 years minimum. *As the MAHC modules are knitted together these overlap areas will be consolidated, reconciled or removed.*

- *COMMENT:*
  6.6.1.2. (14) -- *The manufacturer should have product specific guidelines for operation and/or quality control measures for determining operational efficiency and effectiveness* -- Change functioning “properly” to “according to manufacturers guidelines”

  CHANGES TO CODE/ANNEX:
  Agree. Changed content as suggested.

8. Steve Keifer, Oregon Health Authority (Portland, OR)

- *COMMENT:*
  4.6.1.3 -- *Can't assign an amount of light to 0.5 watt per sq. foot. I suggest the use of lux and lumens.*-- I have some ideas, but I am not an expert. There is a lot of difference between 0.5 watt incandescent and 0.5 watt LED. The amount of light can even vary with the wattage of the bulb.

  I would suggest a lux per sq. ft. (could also be foot-candles) number for above water lighting and lumens per sq. foot of surface area for below water lighting.

  Water can absorb light depending on its quality, so there really isn't a good way to measure the intensity of light (lux), so we have to depend on the amount of light produced (lumens).
  I might suggest, at least:

  Overhead Lighting
  15 ft-candles (160 lux) unguarded with underwater lights
  20 ft-candles (215 lux) guarded with under water lights
  35 ft-candles (375 lux) unguarded without underwater lights
  70 ft-candles (750 lux) guarded without underwater lights

  Underwater Lighting
  Pools >5 ft deep must have underwater lighting
  (MAHC/Lifeguarding is proposing lifeguards on all pools >5 ft. deep).
  Pools w/out guards (10 lamp lumens /sq. foot of pool surface)
  Pools with guards (15 lamp lumens / sq. foot of pool surface) (Pools with water greater than 5 feet have significantly more volume and deeper water)

  Reference: I suggest consulting with the Illuminating Engineering Society of North America (IESNA). I think their lighting standards may be pretty high for normal hotel/apartment pools.

  CHANGES TO CODE/ANNEX:
  Agreed. These measures are used in the Design and Construction module and will be used in the MAHC. As the MAHC modules are knitted together these overlap areas will be consolidated, reconciled or removed.

- *COMMENT:*
  4.6.11.2 -- *300 ft. is too far away. It will be difficult to find in many cases* -- Phone is located within 100 feet of a bather entrance…

  CHANGES TO CODE/ANNEX:

Agreed. Changed to 100 feet.

- *COMMENT:*
  4.8.1.1.1 -- *Some jurisdictions require outdoor pool drains to discharge to a storm sewer.* -- …the sanitary sewer, or the aquatic venue gutter or recirculation system. If the agency with regulatory jurisdiction requires an outdoor pool to have deck drains, they shall discharge to a storm sewer system, ground surface, or holding pond, through an air-gap. – **Reference**: Some waste water systems do not allow outdoor pools to discharge to sanitary. All deck drains should have air-gaps to prevent the buildup of organisms and slime passed from the disposal system.

  CHANGES TO CODE/ANNEX:
  Agree. Added "storm" and last sentence to content.

- *COMMENT:*
  4.8.1.2 -- *No standard* -- All walking surfaces shall be designed to have a cooefficient of friction or at least 0.6. (Alternate "shall be 'slip resistant.'" This is legally defensible) – **Reference**: Use ADA standards

  CHANGES TO CODE/ANNEX:
  Disagree. After much discussion, a value was excluded due to the slip industry having many different meters that measure quite differently giving very different results. At this time, there is a definition provided for guidance. Product manufacturer's can provide details on their products that are most appropriate for an aquatic environment. We encourage more data collection to better address this issue.

- *COMMENT:*
  5.7.4.6.2 -- *104^{o} is not tolerable for most people for the length of time people want to use spas. One study showed that healthy college age women were uncomfortable after less than 15 minutes.* -- The maximum temperature for an aquatic feature is 102^{o} F (Pregnant women greatly increase their change of birth defects at temperatures of 103^{0} F. Small children can tolerate 102^{0} F. temperatures for fairly long periods of time, as can persons with other medical problems.) (This is also a significant energy savings step.) – **Reference**: I think there is more than adequate scientific research indicating that 104^{o} F. is too hot and can cause health effects in the elderly, those on medications, pregnant women and children. All these people are routinely in spas despite being advised against it. Spina Bifida damage can happen before a pregnant women even knows she is pregnant.

  CHANGES TO CODE/ANNEX:

We are aware of the data supporting your comment and data from other sources and countries that do not support your comment and allow higher temperatures. The MAHC needs an independent review of the pregnancy data to assess whether a drop in temperature would be advised and is supported by the data. The data would suggest that people get out of the water when they are uncomfortable but signage has been suggested to warn key groups. More discussion of this has been added to the annex section. Wording has been added to annex.

- *COMMENT:*
  5.9.1.9 -- *Easy for me to read? I'll bet a lot of operators don't want my personal judgment making the determination.* -- "Sufficient" is not appropriate code language. It provides no guidance to the regulatory official or the pool operator. I think the room should have at least a light level of 150 foot candles at 3 feet of height. I'll bet few others would agree with that, but it might be my determination of "sufficient."

  CHANGES TO CODE/ANNEX:
  Agree. Added content that states that 30fc is the minimum.

- *COMMENT:*
  5.9.2.4 -- *Does this prohibit adding chemicals in any manner accept by acceptable equipment? What if I find I have no chlorine in the middle of the afternoon? Do I need to close my facility and chase everyone out, before I can do a quick adjustment to my chemical levels?* -- How about "…while swimmers are allowed in the water. Chemicals shall be given a 'sufficient' amount of time to mix before swimmers are allowed in. (See 5.9.1.9)

  CHANGES TO CODE/ANNEX:
  Agreed. The intent is to not hand broadcast chemicals while bathers are in the pool or for an adequate time after to ensure adequate mixing as covered here and in recirculation and filtration module 5.7.3.1.No venue should be open if no disinfectant is found in the water. As the MAHC modules are knitted together these overlap areas will be consolidated, reconciled or removed.

- *COMMENT:*
  5.9.2.6 -- *Even mixing chlorine compounds is dangerous (Trichlor & Cal. Hypo.)* – Chemicals shall not be mixed ~~with solid or liquid chlorine compounds.~~ <u>together before adding to the pool</u>

  CHANGES TO CODE/ANNEX:
  Agree. Changed as suggested

- *COMMENT:*
  5.9.2.9.1 - *I have a national company and at least one local company that purposefully set inaccurate readings on the controllers to prevent alarms at the monitoring center or reduce their maintenance calls. The national company definitely and deliberately miscalibrates the device.* -- Controllers shall be maintained and accurately calibrated as necessary

  CHANGES TO CODE/ANNEX:
  Disagree. "Accurately" and "calibrated" are one in the same; calibration implies accuracy. One would not calibrate inaccurately.

9. Pamela Scully, CT – Department of Public Health (Hartford, CT)

- *COMMENT:*
  4.6.11.1 -- *Public phones are obsolete. There are other ways to contact 911.* -- A telephone capable of directly dialing 911, or other suitable device for emergency communication, shall be provided and accessible to all aquatic venue users.— **Reference**: Editorial. Similar wording in CT Public Health Code

  CHANGES TO CODE/ANNEX:
  Agree. Alternatives allowed depending on function of facility.

- *COMMENT:*
  4.6.11.2 -- *The suggested 300 feet is too far to go in an emergency!!!!!* -- "...or outside the enclosure within 100 feet of a bather entrance…"

  CHANGES TO CODE/ANNEX:
  Agreed. Changed to 100 feet.

- *COMMENT:*
  4.9.1.6 -- *Not necessary with chlorine tablets. Costly addition for the smaller pools.* -- Chemical storage and pump rooms, where liquid chemicals are used, shall be equipped with an appropriate emergency shower and eye wash station…

  CHANGES TO CODE/ANNEX:
  Disagree. We do not agree that this is just about liquid chemicals. Dust, particulate, and fragments of solid chemicals, including pucks/briquettes can also cause serious eye and other injury. Mixing accidents can also expose workers regardless of whether the chemical was solid or liquid. However, eyewash

stations must be provided depending on the manufacturer's MSDS so we have modified this statement by adding the following to the existing statement: "when required by the manufacture's MSDS".

- *COMMENT:*
  5.9.1.13.1 -- *Cost. Some things not necessary for a small facility vs. a large water park* -- Just want to say I like the waiver here. There should be more waivers in other sections for smaller facilities.

  CHANGES TO CODE/ANNEX:
  No response required.

- *COMMENT:*
  6.4.2.2.4 -- *CT Code* -- 6) Shower, with warm water and soap, before entering the pool. – **Reference**: CT Public Health Code Section 19-13-B33b(b)(17).

  CHANGES TO CODE/ANNEX:
  Disagree. Shower before entering is the agreed statement because we now have both cleansing and rinse showers defined. Pool rinse showers provided on pool decks are prohibited from having soap. No change

- *COMMENT:*
  6.4.2.2.4 -- *CT Code* -- 11) Any persons known or suspected of having a communicable disease shall not use the pool. – **Reference**: CT Public Health Code Section 19-13-B33b(b)(17).

  CHANGES TO CODE/ANNEX:
  Disagree. Added content to annex but not to the code. It is not clear what communicable disease means to the public and diarrhea is really the illness most likely to be spread via water. This category (communicable) could include respiratory illness and other illnesses that are unlikely to be waterborne.

- *COMMENT:*
  6.4.2.2.6 -- *CT Code* -- 4) Do not use alone. – **Reference**: CT Public Health Code Section 19-13-B33b(e)(4).

  CHANGES TO CODE/ANNEX:
  Agreed. Wording added. Discussion added to annex. 6.4.2.2.6

10. Ton Vyles, City of Plano Health Department (Plano, TX)

- *COMMENT:*
  4.5.5.2.3 -- *A venue in Texas lost a case in court due to the lack of signage and markings in an alternative language (Spanish)* -- It is recommended for an aquatic venue to use both imperial and metric units when more than half of the patrons require the use of metric units

  CHANGES TO CODE/ANNEX:
  Disagree. This is a minimum and a facility will have the freedom to provide additional guidance to their patrons as appropriate. No change. Design and construction section 4.5.19.2.4.2 also states the following "Metric units may be provided in addition to—but not in lieu of—units of feet and inches." *As the MAHC modules are knitted together these overlap areas will be consolidated, reconciled or removed.*

- *COMMENT:*
  4.5.5.2.4 -- *There is no reason to allow spas an exemption from depth markings. A 10 foot x 10 foot spa has sufficient deck area to allow for markers.* -- Depth markers are required on all spas

  CHANGES TO CODE/ANNEX:
  Disagree. This is common in industry practice.

- *COMMENT:*
  4.6.11.1 -- *Kings III is an emergency services company in Texas that is widely used and accepted. They function the same as a 911 service.* -- Add: or equivalent service.

  CHANGES TO CODE/ANNEX:
  Disagree. 911 is universal and can be quickly remembered in an emergency for untrained patrons. Facilities have the freedom to add to their signage where their facility or location has unique differences. Wording is included to say the sign should follow the intent of the MAHC wording, not necessarily verbatim. No change.

- *COMMENT:*
  5.8.1.2.3 -- *As written this is unenforceable. Extreme weather, drought or wet, can cause deck sections to move thus creating trip hazards. These cannot always be repaired immediately.* -- Remove immediately. Change to as soon as possible

  CHANGES TO CODE/ANNEX:

Agree. Modified language to state that tripping hazards shall be avoided. Added language stating, "If tripping hazards are present, they should be repaired promptly or barricaded to protect patrons/employees until repairs can be completed." In the annex, added content that recommends following the definition of a trip can be found through ANSI.

- *COMMENT:*
  5.9.2.3 -- *NSF 50 does not approve pool chemicals* -- Remove reference to NSF 50

  CHANGES TO CODE/ANNEX:
  This statement refers to chemical controllers which are NSF certified. No change.

- *COMMENT:*
  6.4.2.2.6 -- *This is a common requirement in codes and is a good safe use limit.* – Add: 15 minute maximum use

  CHANGES TO CODE/ANNEX:
  Disagree. The MAHC would like to see a review of the health data concerning spa use and upper temperature limits to better inform a decision here. No change pending that review. Suggested wording has been added to the annex wording.

- *COMMENT:*
  6.4.2.2 -- *As previously cited.* -- Add: It is recommended to post signs in alternative languages as patron ethnicity may require.

  CHANGES TO CODE/ANNEX:
  Disagree. Facilities have the freedom to add to the requirements. No change to code section. Have added a recommendation to the annex to consider the needs of their clients and provide effective communication which could include signs in more than one language, Braille, etc.

11. Jennifer Hatfeld, ASPS (Sarasota, FL)

- *COMMENT:*
  Acronyms -- *Editorial (to eliminate misuse of the term acronym). See rationale to left in square brackets.* -- *"*~~Acronyms~~ Abbreviations in this Module" [An acronym is a word (or a pronounceable name) formed from the initial letters of words in a compound term, e.g. *radar, scuba,* or *snafu*. While some of the abbreviations listed may be pronounced as single words e.g. FINA (*fee'·nah*), ASHRAE (*ash ·ray*) and occasionally ORP (*orp*) —most are not.] – **Reference**: http://www.thefreedictionary.com/acronym

CHANGES TO CODE/ANNEX:
Agree. Added Initialisms to title as well as Acronyms.

- *COMMENT:*
  Acronyms -- *Editorial (supplies missing definition)* – ORP Oxidation-Reduction Potential

  CHANGES TO CODE/ANNEX:
  Agree. Changed as suggested.

- *COMMENT:*
  Acronyms -- *Editorial (supplies missing letter and definition)* – SVRS Safety Vacuum Release System – **Reference**: http://www.poolsafely.gov/pool-spa-safety/safety-issues/drain-entrapments/additional-prevention/

  CHANGES TO CODE/ANNEX:
  Agree. Changed as suggested.

- *COMMENT:*
  Glossary entry "Chlorine" – *Accuracy* -- ...is a heavy greenish yellow gas – **Reference**: http://dictionary.reference.com/browse/chlorine

  CHANGES TO CODE/ANNEX:
  Definition was changed to read, **"'Chlorine'** means an element that at room temperature and pressure is a heavy green gas with characteristic odor and is extremely toxic. It can be compressed in liquid form and stored in heavy steel tanks to be used as a swimming pool disinfectant, but most pools now add other chlorine compounds (e.g. calcium hypochlorite or sodium hypochlorite) as disinfectants. Chlorine and chlorine-based disinfectants release hypochlorous acid and hypochlorite ion when dissolved in water. Chlorine is a general term used in the MAHC which refers to hypochlorous acid. Chlorinating agents are the most commonly used disinfectants for pools."

- *COMMENT:*
  Glossary entry "Chlorine" -- *Improve precision of description* -- ...with characteristic pungent odor... – **Reference**: http://dictionary.reference.com/browse/chlorine

  CHANGES TO CODE/ANNEX:
  Definition was changed to read, **"'Chlorine'** means an element that at room temperature and pressure is a heavy green gas with characteristic odor and is

extremely toxic. It can be compressed in liquid form and stored in heavy steel tanks to be used as a swimming pool disinfectant, but most pools now add other chlorine compounds (e.g. calcium hypochlorite or sodium hypochlorite) as disinfectants. Chlorine and chlorine-based disinfectants release hypochlorous acid and hypochlorite ion when dissolved in water. Chlorine is a general term used in the MAHC which refers to hypochlorous acid. Chlorinating agents are the most commonly used disinfectants for pools."

- *COMMENT:*
  Glossary entry "Chlorine" -- *Improve precision of description. See rationale in square brackets.*- ...with ~~characteristic~~ pungent odor… **Reference**: http://dictionary.reference.com/browse/chlorine

  CHANGES TO CODE/ANNEX:
  Definition was changed to read, **"'Chlorine'** means an element that at room temperature and pressure is a heavy green gas with characteristic odor and is extremely toxic. It can be compressed in liquid form and stored in heavy steel tanks to be used as a swimming pool disinfectant, but most pools now add other chlorine compounds (e.g. calcium hypochlorite or sodium hypochlorite) as disinfectants. Chlorine and chlorine-based disinfectants release hypochlorous acid and hypochlorite ion when dissolved in water. Chlorine is a general term used in the MAHC which refers to hypochlorous acid. Chlorinating agents are the most commonly used disinfectants for pools."

- *COMMENT:*
  Glossary entry "Chlorine" -- *Improve precision of description. See rationale to left in square brackets.* -- ...and is ~~extremely~~ irritating and toxic… [With a gas LC50, rat, 4-hour >100 PPM (USDHHS, 2010) the Hodge & Sterner scale (CCOHS, 2005) would classify chlorine as "moderately toxic". To be called extremely toxic the LC 50 would need to be 10 or less. The US Dept. of Health & Human Services reports chlorine LC50 values for a range of exposure times, from various sources. Included is an LC50 of 293 PPM for 1-hour exposure, rats, (Vernot, 1977), which GHS criteria would translate to half as many PPM for a 1-hour exposure (147 PPM). Also listed are an LC50 of 1000 PPM for 53 minutes and 250 PPM for 440 minutes. (Weedon, 1940) Linear interpolation to 4 hours (240 minutes) would place the LC50 for rats at ~640 PPM. A third set of listings (Zwart, 1988), give 5486 PPM for 5 minutes,1926 PPM for 10 minutes, 688 PPM for 30 minutes and 447 PPM for 1 hour. A non-linear extrapolation of this data to 4 hours gives ~98 PPM (model: $y = 23{,}074.554317x^{-0.997272}$). A GHS (see ref. at right) conversion of the 1-hour value to 4 hours would give 447/2 = 223 PPM. This range of projected LC50, rat, 4-hour values: 98, 147, 223, 638 PPM is not consistent with a description of *extremely toxic* even if chlorine gas is more toxic than most commonly used pool treatment chemical.] – **Reference**: U.S. Dept. Health & Human Svcs, Publ. Health Svc., Agency for Toxic Substances &

Disease Registry, "Chlorine", 2010, Table 3-1, p. 30, (http://www.atsdr.cdc.gov/toxprofiles/tp172-c3.pdf, downloaded 11/4/2011); Canadian Centre for Occupational Health and Safety, "What is an LD50 and LC50", Table 1 "Toxicity Classses: Hodge and Sterner Scale", Hamilton Ontario, 2005, (http://www.ccohs.ca/oshanswers/chemicals/ld50.html?print, 11/4/2011); see also "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)", 3rd rev. edn., Part 3, "Health Hazards", section 3.1.2.6.1, United Nations , 2009, p. 111, (http://www.unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs_rev03/English/03e_part3.pdf, 11/4/2011) for conversion of 1-hour LC50 to 4-hour.

CHANGES TO CODE/ANNEX:
Definition was changed to read, **"'Chlorine'** means an element that at room temperature and pressure is a heavy green gas with characteristic odor and is extremely toxic. It can be compressed in liquid form and stored in heavy steel tanks to be used as a swimming pool disinfectant, but most pools now add other chlorine compounds (e.g. calcium hypochlorite or sodium hypochlorite) as disinfectants. Chlorine and chlorine-based disinfectants release hypochlorous acid and hypochlorite ion when dissolved in water. Chlorine is a general term used in the MAHC which refers to hypochlorous acid. Chlorinating agents are the most commonly used disinfectants for pools."

- *COMMENT:*
  4.5.5.2.3 -- *The International Swimming Pool & Spa Code (ISPSC) requires depths to be displayed in feet and inches, allowing for metric in addition to feet and inches.* -- Depth markers shall indicate the unit of measurement in feet, and inches, or meters. Meters may be displayed in addition to feet and inches. – **Reference:** See section 409.2.8 of the ISPSC. www.iccsafe.org/cs/ispsc

  CHANGES TO CODE/ANNEX:
  Disagree. It can be ideal for depths to be placed in feet, inches with meters optional but it is not required. Facilities have the freedom to include additional units based on their unique operation. No change. Design and construction section 4.5.19.2.4.2 also states the following "Metric units may be provided in addition to—but not in lieu of—units of feet and inches." *As the MAHC modules are knitted together these overlap areas will be consolidated, reconciled or removed.*

- *COMMENT:*
  4.5.5.2.4 -- *The ISPSC and the ANSI/NSPI-2 Standard for Public Spas requires depth markers and "No Diving" signs in all pubic spas.* -- Depth markers for spas shall meet the above requirements. Small spas less than 200 square feet (61m) do **not** require depth markers or "No Diving" signs. – **Reference:** See sections 509.2 and 509.3 of the ISPSC www.iccsafe.org/cs/ispsc . A copy of the

ANSI/NSPI 2 standard can be provided by request.

CHANGES TO CODE/ANNEX:
Disagree. No changes due to common industry practice.

- *COMMENT:*
4.5.5.2.8 -- *1.) In the ANSI/APSP 1 Standard, diving well dimensions are based on extensive 3rd party testing and research, which was sponsored in large part by the NSPF. 2.) There are no certifying agencies in the US for FINA. There are national governing bodies for the competitive sports of swimming and diving as USA swimming, USA Diving, NCAA, NAIA, NJCAA, YMCA, etc. Many of these organizations utilize or refer to the FINA for their diving well, geometry, but not all. 3.) The ANSI Z 535-4 Standard was developed in cooperation with NEMA and is a recognized authoritative standard. 4.) The sign referenced in this comment was endorsed by the US Consumer Product Safety Commission, after significant study and research. This sign is also found in the ISPSC. --* AQUATIC VENUEs without an approved diving well configuration ~~as defined by~~ that complies with either FINA or the ANSI/NSPI 1 2003 American National Standard for Public Swimming Pools ~~their local certifying agency~~ shall have ~~the international~~ "NO DIVING" signs posted throughout the pool area ~~symbol~~. AQUATIC VENUEs with an approved diving well configuration as defined above shall have "NO DIVING" signs posted in all portions of the Venue other than the diving well. All "NO DIVING" signs shall comply with the ANSI Z-535 Standards for safety signage, or be as shown in figure *insert figure number or insert figure itself here* or similar thereto. **– Reference:** A copy of the ANSI/APSP 1 can be provided by request. A copy of the ANSI Z 535 Standard must be obtained by ANSI. See Section 412.1 and Figure 412.1 of the ISPSC. www.iccsafe.org/cs/ispsc

CHANGES TO CODE/ANNEX:
Agree. Moved content to the annex and change content to read, "Moveable fulcrum is adjusted properly to control spring in the board as necessary."

- *COMMENT:*
4.5.5.2.8.2 -- *To say "where competition diving is in practice" is incongruous. Practice and training are synonymous with respect to sports and are the opposite of competition.* -- NO DIVING symbols are not required to be installed where competition diving is in practice. "NO DIVING" symbols are not required to be installed where competitive diving and training are permitted.

CHANGES TO CODE/ANNEX:
Agreed. It is unlikely that this scenario occurs so the section has been deleted.

- *COMMENT:*
  4.6.1.2.1 -- *Recommend deleting the word "Swimming" because it is somewhat synonymous with Aquatic Venues, but not entirely. All Aquatic Venues should be lighted at night if they are going to be used.* -- Artificial lighting shall be provided at all swimming AQUATIC VENUEs which are to be used at night or which do not have adequate natural lighting.

  CHANGES TO CODE/ANNEX:
  Agree. Changed as suggested.

- *COMMENT:*
  4.6.1.3.1 -- *Consistency: Follow the common sense recommendation in the annex.* -- Underwater lighting shall be a minimum of ~~one-half watt~~ 6.25 lumens per square foot of AQUATIC VENUE water surface area. – **Reference**: Same section (4.6.1.3.1) in Annex of same module (Risk Management...)

  CHANGES TO CODE/ANNEX:
  Agreed. Lumens are to be used in MAHC Design and Construction module Section 4.6.1.4 says, "Underwater lighting of not less than 6 initial rated lumens per square foot of POOL water surface area shall be provided. Higher underwater light levels should be considered for deeper water." *As the MAHC modules are knitted together these overlap areas will be consolidated, reconciled or removed.*

- *COMMENT:*
  4.6.11.2 -- *300 feet outside of the pool enclosure/bather entrance is too far – it is the entire length of a football field and to be visible from within the AQUATIC VENUE enclosure is a far stretch. If this is a visitor who is unfamiliar with the facility they will not find a phone that is 300 feet from the pool entrance. You would also not want that single person on the deck, whether it is a lifeguard or not, to have to leave the emergency situation for such a long time to go to a phone 300 feet or more away.* -- The emergency telephone shall be permanently affixed to a location inside the AQUATIC VENUE enclosure or outside the enclosure within 300 square feet (91.44m) of a BATHER entrance and visible from within the AQUATIC VENUE enclosure. If not possible inside the AQUATIC VENUE, the emergency telephone shall be placed immediately outside the BATHER entrance.

  CHANGES TO CODE/ANNEX:
  Agreed. Changed to 100 feet.

- *COMMENT:*
  5.9.2.3 – 1) *NSF 50 is for testing and certification of equipment only, not*

chemicals. 2) The term "NSF approved" is considered unacceptable to NSF. -- The ~~chemicals~~ equipment used in controlling the quality of water shall be NSF 50 ~~approved~~ Certified and used only in accordance with the manufacturer's instructions. – **Reference**: 1) NSF/ANSI 50-2011, "Equipment for Swimming Pools, Spas, Hot Tubs and other Recreational Water Facilities", Ann Arbor: NSF International, Aug. 10, 2011. http://www.techstreet.com/cgi-bin/detail?doc_no=nsf%7C50_2011;product_id=1812025 2) "Acceptable/ Unacceptable Language for Use with the NSF Mark in Advertising or Promotional Materials" in "The Guide for Using the NSF Mark", Ann Arbor: NSF International, 2008, p. 9 http://www.nsf.org/business/about_NSF/marks_guide.pdf

CHANGES TO CODE/ANNEX:
Agree. Changed "approved" to "certified."

- *COMMENT:*
  5.9.2.3.1 -- *Addresses chemical concern in original wording of 5.9.2.3.Helps to prevent dangerous mixing of incompatible chemicals and to insure that the chemical delivery rate meets label claims.* -- Chemical feeders shall be used only with the chemical(s) specified in or allowed by the NSF/ANSI Listing and use instructions or data plate of the feeder. In addition the use of the chemical shall comply with the manufacturer's instructions. Sanitizers shall be EPA registered for the given use. – **Reference:** Sections 9 & 10 & Annexes G.1 and G.3 of NSF/ANSI 50-2011, "Equipment for Swimming Pools, Spas, Hot Tubs and other Recreational Water Facilities", Ann Arbor: NSF International, Aug. 10, 2011. http://www.techstreet.com/cgi-bin/detail?doc_no=nsf%7C50_2011;product_id=1812025

  CHANGES TO CODE/ANNEX:
  Agree. Modified sentence to read, "The chemical equipment used in controlling the quality of water shall be NSF 50 certified and used only in accordance with the manufacturer's instructions."

- *COMMENT:*
  5.9.2.5 -- *Editorial (clarity; not all chemicals would require measuring devices).* -- ~~Measuring devices and containers for each chemical shall be used.~~ To avoid cross contamination and possible reaction hazards each measuring cup or other volumetric measurement device used in the facility shall be dedicated to a single chemical, and shall not be allowed to contact any other chemical until the device has been thoroughly cleaned and dried.

  CHANGES TO CODE/ANNEX:
  Agree. Changed sentence for clarity.

- *COMMENT:*
  5.9.2.9 -- *The controller should measure more than just the residual chemical levels because residual includes all Total Chlorine including chloramines, which should not be included for chemical feed considerations. Needs to be able to decipher between free and total chlorine.* -- A controller capable of measuring the sanitizer residual (e.g. Free Available Chlorine, Total Bromine or a surrogate such as ORP) shall be used to maintain the sanitizer residual in spas.

  CHANGES TO CODE/ANNEX:
  Agreed. Wording changed.

- *COMMENT:*
  5.9.2.9.1 -- *This might be addressed in the module for testing, but wanted to clarify here as well.* -- Controllers shall comply with NSF standards for accuracy and be maintained and calibrated as necessary.

  CHANGES TO CODE/ANNEX:
  Agree. Changed as suggested.

- *COMMENT:*
  6.1.1.8 -- *Editorial: completeness and clarity. See rationale to left in square brackets.* -- …trained to recognize and respond to RWI, BBP, and visible signs of sanitary hazards such as fecal matter or vomitus in and around the AQUATIC VENUE area. [1) Vomit (or more precisely vomitus) would not be the only observable sanitation issue around a pool. 2) The original wording would allow the word vomit to be interpreted as a verb in parallel with "recognize and respond": "trained to…vomit in and around…"]

  CHANGES TO CODE/ANNEX:
  Agreed. Have clarified wording

- *COMMENT:*
  6.4.2.2.6 -- *For consistency with ISPSC* -- Consider adding language to this section found in 509.1 and 509.2 of the ISPSC. – **Reference**: See Sections 509.1 and 509.2 of the ISPSC. www.iccsafe.org/cs/ispsc

  CHANGES TO CODE/ANNEX:
  Have altered wording in section to clarify and wording has been added to the annex

- *COMMENT:*
  6.6.1 -- Recommendation: The standard would benefit from more specific guidance, at least in the annex, if not in the body. E.g. 6.6.1.2, item 7 what constitutes "good condition" or item 14 how should an SVRS be tested, and what measurable criteria must it meet?

  CHANGES TO CODE/ANNEX:
  Agreed. Wording altered.

- *COMMENT:*
  6.6.1.1 (9) -- *Editorial (provides specific guidance).* -- …or other electrical equipment are not ~~in proximity to~~ within 6 feet of the water. (Alternative: keep the original wording, but define *in proximity* by cross referencing to a section like 4.6.11.4.) -- **Reference**: 2008 NEC – Art. 680.22. See also section 4.6.11.4 of this module of the MAHC

  CHANGES TO CODE/ANNEX:
  Disagree. Content was previously adjusted based on another comment to include reference to the NEC Article 680.22. No change.

- *COMMENT:*
  6.6.1.1 (9) -- *Current language is too vague and mixes permanently installed with plug and cord connected appliances.* -- Delete current 9) and replace with the following: "9) all electrical devices shall be checked for any disrepair such as missing or broken faceplates and knockouts, broken conduits and fittings, exposed wiring, damaged/unattached underwater lights, and proper functioning of GFCIs, switches, emergency disconnects. Non-permanent electrical devices shall also be checked to ensure they are not in close proximity to water."

  CHANGES TO CODE/ANNEX:
  Agree. Modified content to include reference to the NEC. Additional information also added to the Annex for guidance.

- *COMMENT:*
  6.6.1.2 -- *Editorial (completeness of abbreviation)* -- 14) SVRS is functioning properly. – **Reference:** http://www.poolsafely.gov/pool-spa-safety/safety-issues/drain-entrapments/additional-prevention/

  CHANGES TO CODE/ANNEX:
  Agreed. Changed wording to "according to manufacturer's guidelines".

- *COMMENT:*
  6.6.1.2 (9), (13), and (14) -- *With regard to sub-9, there are no studies or statistical evidence that demonstrated that there are fewer accidents when the fulcrum is secured in the forward position then when it is not. Should be up to local facility. With regard to sub-13, should ensure all suction fittings have secure covers. With regard to sub-14, utilize the standard term for an Suction Vacuum Release System (SVRS) and add other items allowed by the VGB Act that need period inspection.* -- 6.6.1.2 9) Movable fulcrum is all the way forward and secured to control spring in board; 13) Dain covers and all suction fittings are secured and undamaged; 14) If present, SVRS, Automatic Pump Shut Off, or Suction Limiting Vent System is functioning properly;

  CHANGES TO CODE/ANNEX:
  Agreed. Moved content to the annex and changed code content to read, "Moveable fulcrum is adjusted properly to control spring in the board as necessary."

- *COMMENT:*
  6.6.1.2 (16) -- *Editorial (provides specific guidance, including measures for water clarity, pH and sanitizer residual).* -- Water quality and clarity is satisfactory are compliant with sections 4.7 and 5.7 of this module (assuming those sections will be completed) or ANSI/APSP-11. – **Reference**: Assoc. of Pool & Spa Professionals, "American National Standard for Water Quality in Public Pools and Spas", ANSI/APSP-11, 2009

  CHANGES TO CODE/ANNEX:
  Agreed. Added "is MAHC compliant".

- *COMMENT:*
  ANNEX 4.5.5.2.8 -- *Same as reasons listed above in 4.5.5.2.8 for the first change. Regarding paragraph 3, divers would not train in 4-6 feet of water, should clarify this is in regards to competitive racing training.* -- Diving boards are permitted only when the diving envelope conforms to the standards of the certifying agency that regulates diving at the facility - National Collegiate Athletic Association (NCAA), the National Federation of State High School Associations (NFSHSA), the Federation Internationale de Natation Amateur (FINA), or U.S. Diving. If the venue does not have competitive diving, then the diving envelope must conform to these diving envelope standards.or the ANSI/NSPI-1 2003

  CHANGES TO CODE/ANNEX:
  Disagree. The minimum head first entry pool depth for experienced competitive swimmers diving from side or starting blocks would be 4' but must be at a supervised practice or competition with certified coach/instructor present.

Recommend no change to the content.

- *COMMENT:*
  American National Standard for Public Pools
  Third Paragraph: This requirement is not intended to apply to competition AQUATIC VENUEs where skilled divers competitive swimmers train and compete in 4-6 feet (1.3-2m) of water and are under the supervision of a certified instructor.

  CHANGES TO CODE/ANNEX:
  Agreed. Have clarified by having both divers and swimmers included

- *COMMENT:*
  ANNEX 5.7.4.6.3 -- *This temperature is recommended by the NCAA as well as USA Swimming's recommendation for higher temperatures in diving facilities.--*
  Add to chart:

Separate Diving Pool	82-86 F = 27.5-30 C
Resistance Training	83-86 F = 28-30 C

  CHANGES TO CODE/ANNEX:
  As this is only an example, keeping the content as is.