

## **Model Aquatic Health Code**

### **Risk Management/Safety Module CODE Section for the First 60-day Review**

**Posted for Public Comment on 09/16/2011**

**Currently Open for Public Comment that Closes on 11/18/2011**

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***In an attempt to speed the review process along, the MAHC steering committee has decided to release MAHC draft modules prior to their being fully complete and formatted. These drafts will continue to be edited and revised while being posted for public comment. The complete versions of the drafts will be available for public comment again when all MAHC modules are posted for final public comment. The MAHC committees appreciate your patience with the review process and commitment to this endeavor as we all seek to produce the best aquatic health code possible.***

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## MAHC Risk Management/Safety Module Abstract

Increased vigilance is needed at aquatic venues to reduce injuries in the water, chemical storage room, and around the pool and facility. The Risk Management/Safety Module outlines steps to be taken to manage and reduce these risks and associated health problems. The Risk Management/Safety Module contains new guidelines covering:

- 1) Controlled access aquatic venues (e.g., lazy rivers) not requiring depth markers throughout.
- 2) Expanded employee training to cover fecal- and vomit-related pathogen response and clean-up.
- 3) Potential sources of glare and ways to prevent glare in aquatic venue design.
- 4) Consideration of water temperature and patron use.
- 5) Expanded chemical storage and handling.
- 6) Use of remote monitoring systems.
- 7) Employee illness policies.
- 8) Inspection items for daily opening and closing of aquatic features or venues.

## MAHC Risk Management/Safety Module Review Guidance

The [Model Aquatic Health CODE \(MAHC\) Steering](http://www.cdc.gov/healthywater/swimming/pools/mahc/steering-committee/) (<http://www.cdc.gov/healthywater/swimming/pools/mahc/steering-committee/>) and [Technical](http://www.cdc.gov/healthywater/swimming/pools/mahc/technical-committee/) (<http://www.cdc.gov/healthywater/swimming/pools/mahc/technical-committee/>) [Committees](#) appreciate your willingness to review this draft MAHC module. Your unique perspectives and science-based suggestions will help ensure that the best available standards and practices for protecting aquatic public health are available for adoption by state and local environmental health programs.

Review Reminders:

- Please download and use the [MAHC Comment Form](http://www.cdc.gov/healthywater/swimming/pools/mahc/structure-content/) (<http://www.cdc.gov/healthywater/swimming/pools/mahc/structure-content/>) to submit your detailed, succinct comments and suggested edits. Return your review form by November 18, 2011, as an email attachment to [MAHC@cdc.gov](mailto:MAHC@cdc.gov).
- If part of a larger group or organization, please consolidate comments to speed the MAHC response time to public comments.
- To provide context for this module review, please consult the [MAHC Strawman Outline](http://www.cdc.gov/healthywater/pdf/swimming/pools/mahc/structure-content/mahc-strawman.pdf) (<http://www.cdc.gov/healthywater/pdf/swimming/pools/mahc/structure-content/mahc-strawman.pdf>). Section headers of related content have been included in this draft module to assist reviewers to see where each section fits into the overall MAHC structure. Additional MAHC draft modules that contain this content will be or already have been posted for your review.

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- MAHC Grading System
  - A grading system is provided for the recommended standards. It is based on the perceived reliability and accuracy of the material presented. This grading system is divided into three levels. The MAHC grading system is as follows:
    - Grade A: Practice supported by science/research/data.
    - Grade B: Generally accepted practice not supported by science/research/data.
    - Grade C: No generally accepted practice. Proposed language not yet supported by science/research/data.
- The complete draft MAHC, with all of the individual module review comments addressed will be posted again for a final review and comment before MAHC publication. This will enable reviewers to review modules in the context of other modules and sections that may not have been possible during the initial individual module review.
- The published MAHC will be regularly updated through a collaborative all-stakeholder process.

Please address any questions you may have about MAHC or the review process to [MAHC@cdc.gov](mailto:MAHC@cdc.gov). You may also request to be on the direct email list for alerts on the other draft MAHC modules as they are released for public comment.

Thank you again, and we look forward to your help in this endeavor.  
Sincerely,

Douglas C. Sackett, Director  
MAHC Steering Committee

The following chart shows the context of Operation and Maintenance module in the overall Model Aquatic Health Code's Strawman.

***Reviewer Note on Module Section Numbering:***

Please use the specific section numbers to make your comments on this Draft Model Aquatic Health Code module. These numbers may eventually change during the editing of the compiled draft that will be issued for a final round of comments.

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**6.6 Inspections****Acronyms in this Module**

AED	Automated external defibrillator
AHJ	Authority having jurisdiction
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BBP	blood borne pathogens
EAP	Emergency Action Plan
EPA	Environmental Protection Agency
FINA	Federation Internationale de Natation Amateur
GFCI	ground fault circuit interrupter
HMIS	Hazardous Material Identification System
IESNA	Illuminating Engineering Society of North America
MSDS	material safety data sheet

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NFPA	National Fire Protection Association
<b>ORP</b>	
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RWI	Recreational Waterborne Illnesses
<b>SVR</b>	

### Glossary Terms in this Module

**“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, river, spas (including spa pools and hot tubs), therapeutic pools, spray pads.

**“Aquatic Venue Deck”** means surface areas serving the aquatic venue, beyond perimeter deck, which is expected to be regularly trafficked and made wet by aquatic venue users.

**“Authority Having Jurisdiction”** means an agency, organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

**“Bather”** means a person at an aquatic venue who has contact with water either through spray or partial or total immersion. Bathers can be exposed to contaminated water as well as potentially contaminate the water.

**“Best Practice”** means a technique or methodology that, through experience and research, has been proven to reliably lead to a desired result.

**“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, but most aquatic venues now add other chlorine compounds (e.g. hypochlorite) that similar to the liquid form release hypochlorous acid when dissolved in water. Chlorinating agents are the most commonly used disinfectants for aquatic venues.

**“Code”** means a systematic statement of a body of law, especially one given statutory force.

**“Ground Fault Circuit Interrupter”** means a device for protection of personnel that de-energizes an electrical circuit or portion thereof in the event of excessive ground current.

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**“Hygiene Facility”** means a building that contains toilet, shower, and dressing capabilities serving bathers and patrons at an aquatic facility.

**“pH”** means a symbol that expresses the negative log of the concentration of hydrogen ions. When water ionizes, it produces hydrogen ions (H<sup>+</sup>) and hydroxide ions (OH<sup>-</sup>). If there is an excess of hydrogen ions the water is acidic. If there is an excess of hydroxide ions the water is basic. pH ranges from 0 to 14. Pure water has a pH of 7.0. If pH is higher than 7.0, the water is said to be basic, or alkaline. If the water’s pH is lower than 7.0, the water is acidic. As pH is raised, more ionization occurs and chlorine disinfectants decrease in effectiveness.

**“Pool”** means a subset of aquatic venue designed to have impounded/standing water for total or partial bather immersion.

**“Safety” (as it relates to construction items)** means a design standard intended to prevent inadvertent or hazardous operation or use (i.e., a passive engineering strategy).

**“Standard”** means something established by authority, custom, or general consent as a model or example.

**“Storage”** means the condition of remaining in one space for one hour or more. Materials in a closed pipe or tube awaiting transfer to another location shall not be considered to be stored.

**“Therapy Venue”** means a pool, spa, current channel, or current streams utilized for the practice of hydrotherapy, in which the water temperature ranges from 82° F to 104°F. It is designed or used for, but is not limited to treatment, rehabilitation, prevention, health, strength training, wellness and fitness of patients/clients across the age span with musculoskeletal, neuromuscular, cardiovascular/pulmonary, and integumentary (skin) diseases, disorders, or conditions.

**“Wading Pool”** means an aquatic venue designed and intended for use by children that is no deeper than 2.0 feet, is used for wading purposes, and contains no sprays or features.

## Preface

*This document does not address all safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to each use.*

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- Grade A: Practice supported by science/research/data;
- Grade B: Generally accepted practice not supported by science/research/data; and
- Grade C: No generally accepted practice. Proposed language not yet supported by science/research/data.

If an entire section has the same grade, one grade will be assigned to the section header. Otherwise, individual paragraphs/topics will be assigned their own grade.

**Model Aquatic Health Code  
Risk Management/Safety Module  
4.0 Design Standards and Construction**

Keyword	Section	Code	Grade
	<b>4.0</b>	<b>Design Standards and Construction</b>	
	<b>4.1</b>	<b>Plan Submittal</b>	
	<b>4.2</b>	<b>Materials</b>	
	<b>4.3</b>	<b>Equipment Standards</b>	
	<b>4.4</b>	<b>Aquatic Venue Operation and Facility Maintenance</b>	
	<b>4.5</b>	<b>Aquatic Venue Structure (Shell)</b>	
	<b>4.5.1</b>	<b>Shape</b>	
	<b>4.5.2</b>	<b>Access Ladders/Recessed Steps/Stairs</b>	
	<b>4.5.3</b>	<b>Color and Finish</b>	
	<b>4.5.4</b>	<b>Walls</b>	
<i>Depth Marking</i>	<b>4.5.5</b>	<b>Depth Markers and Markings</b>	
<i>Location</i>	<b>4.5.5.1</b>	<b>Location of Depth Markings</b>	
<i>Visible</i>	4.5.5.1.1	Depth markings shall be visible to patrons when they enter the AQUATIC VENUE to inform the patron of the water depth and when water depth changes.	
<i>Depth Measurements</i>	4.5.5.1.2	Depth markers shall indicate the actual AQUATIC FEATURE depth, within 3 inches (8cm), at normal operating water level when measured 3 feet (1m) from the AQUATIC VENUE wall.	A
<i>Dual Marking System</i>	4.5.5.1.2.1	<i>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.</i>	
<i>Depth Markings</i>	4.5.5.1.3	Depth markings shall be located on both sides of the AQUATIC VENUE at the shallow end, slope break, deep end wall and deep point if the deep point is located more than five feet (1.5m) from the deep end wall.	

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<i>Legible</i>	4.5.5.1.4	Depth markings shall be legible from inside the AQUATIC VENUE and also from the AQUATIC VENUE DECK.	
<i>Maximum Perimeter Distance</i>	4.5.5.1.5	The maximum perimeter distance between depth markings shall be 25 feet (7.62m) or as determined during the plan review process for unique pool size and geometry.	
<i>Location</i>	4.5.5.1.6	Depth markers shall be located both on the vertical wall at or above water level and on the horizontal surface within 3 feet (1m) of the water's edge.	
<i>Position</i>	4.5.5.1.6.1	Depth markers shall be positioned so as to be read while facing water's edge.	
<i>Non-traditional AQUATIC VENUES</i>	4.5.5.1.7	Controlled-access AQUATIC VENUES such as an activity POOL, lazy rivers, etc. do not require depth markers but the depth should be indicated on a sign at the entry to such an AQUATIC VENUE.	
<i>Requirements for Depth Markings</i>	<b>4.5.5.2</b>	<b><i>Requirements for Depth Markings</i></b>	
<i>Color and height</i>	4.5.5.2.1	Depth markers shall be permanent markings, contrasting in color, and at least 4 inches (10cm) in height.	A
<i>Slip resistant</i>	4.5.5.2.2	Depth markers shall be slip resistant for depth markers on walking surfaces.	A
<i>Unit of measurement</i>	4.5.5.2.3	Depth markers shall indicate the unit of measurement in feet, inches, or meters.	A
<i>Spa depth Markers</i>	4.5.5.2.4	Depth markers for spa shall meet the above requirements. Small spas less than 200 square feet (61m) do <b>not</b> require depth markers or "No Diving" signs.	
<i>Wading AQUATIC VENUE Depth Markers</i>	4.5.5.2.5	Wading pools and water activity FEATURES (aqua play) are <b>not</b> required to have depth markings or no diving signage if water depth is 2.5 inches (6.35cm) of water or less.	A

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<i>Movable Floor Depth Markers</i>	4.5.5.2.6	For AQUATIC VENUES with movable floors, a sign indicating movable floor and/or varied water depth shall be provided and clearly lit and visible.	A
<i>Movable Floors</i>	4.5.5.2.6.1	The posted water depth shall be water level to the floor of the AQUATIC VENUE according to a vertical measurement taken 3 feet (1m) from the AQUATIC VENUE wall.	
<i>Signage</i>	4.5.5.2.6.2	A sign should be posted to inform the public that the AQUATIC VENUE has a varied depth and refer to the sign showing the current depth.	
<i>Abbreviations</i>	4.5.5.2.7	Abbreviations for units of measure including feet, inches, and meters shall be acceptable to use on water depth signs.	
<i>No Symbols for Feet and Inches</i>	4.5.5.2.7.1	Symbols for feet (') and inches (") shall not be permitted on water depths signs to avoid confusion.	
<i>No Diving Symbol</i>	4.5.5.2.8	AQUATIC VENUES without an approved diving well configuration as defined by FINA or their local certifying agency shall have the international "NO DIVING" symbol.	A
<i>No Diving Symbol Location</i>	4.5.5.2.8.1	NO DIVING symbols shall also be installed every 25 feet (7.62m) except in AQUATIC FEATURES where diving is permitted.	
<i>Competition Diving</i>	4.5.5.2.8.2	<i>NO DIVING symbols are not required to be installed where competition diving is in practice.</i>	
	<b>4.5.6</b>	<b>Aquatic Venue Shell Maintenance [N/A]</b>	
<i>Indoor/Outdoor Environment</i>	<b>4.6</b>	<b>Indoor/Outdoor Environment</b>	
<i>Lighting</i>	<b>4.6.1</b>	<b>Lighting</b>	A
<i>Windows/Natural Light</i>	<b>4.6.1.1</b>	<b>Glare</b>	
<i>Glare</i>	4.6.1.1.1	Glare from artificial light that interferes with the lifeguard's view of the swimmers shall be avoided.	
<i>Light Levels</i>	<b>4.6.1.2</b>	<b>Light Levels</b>	C

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<i>Artificial Lighting</i>	4.6.1.2.1	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.
<i>AQUATIC VENUE Floor</i>	4.6.1.2.2	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.
<i>No Blind Spots</i>	4.6.1.2.3	Lighting shall provide complete illumination to all underwater areas of the AQUATIC VENUE without blind spots.
<i>AQUATIC VENUE Illumination</i>	4.6.1.2.4	Lighting shall illuminate all parts of the AQUATIC VENUE including the water, the depth markers, signs, entrances, restrooms, SAFETY equipment, and the required deck area and walkways.
<i>Underwater Lighting</i>	<b>4.6.1.3</b>	<b><i>Underwater Lighting</i></b>
<i>Underwater Lighting Minimum</i>	4.6.1.3.1	Underwater lighting shall be a minimum of one-half watt per square foot of AQUATIC VENUE water surface area.
<i>AQUATIC VENUE Bottom</i>	4.6.1.3.2	Underwater lighting shall fully illuminate the AQUATIC VENUE bottom and drains.
	<b>4.6.1.4</b>	<b><i>Water Surface</i></b>
	<b>4.6.1.5</b>	<b><i>Emergency Lighting</i></b>
	<b>4.6.1.6</b>	<b><i>Glare</i></b>
	<b>4.6.2</b>	<b><i>Ventilation</i></b>
	<b>4.6.3</b>	<b><i>Electrical</i></b>
	<b>4.6.4</b>	<b><i>Heating</i></b>
	<b>4.6.5</b>	<b><i>First Aid Room</i></b>
<i>Emergency Exit</i>	<b>4.6.6</b>	<b><i>Emergency Exit</i></b>
<i>Emergency Exit</i>	4.6.6.1	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.

C

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<i>Labeling</i>	4.6.6.2	Unless all gates or doors are so equipped, those 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".
	<b>4.6.7</b>	<b>Drinking Fountains</b>
	<b>4.6.8</b>	<b>Garbage Receptacles</b>
	<b>4.6.9</b>	<b>Food and Drink Concessions</b>
	<b>4.6.10</b>	<b>Spectator Areas</b>
<i>Telephone</i>	<b>4.6.11</b>	<b>Telephone</b>
<i>Emergency Capabilities</i>	4.6.11.1	A telephone capable of directly dialing 911 Emergency Personnel shall be provided and accessible to all AQUATIC VENUE users.
<i>Permanently Affixed</i>	4.6.11.2	The emergency telephone shall be permanently affixed to a location inside the AQUATIC VENUE enclosure or outside the enclosure within 300 feet (91.44m) of a BATHER entrance and visible from within the AQUATIC VENUE enclosure.
<i>Signage</i>	4.6.11.3	A sign shall be posted at the telephone providing dialing instructions, address of the AQUATIC VENUE location, and the telephone number.
<i>Replacement Cables</i>	4.6.11.4	Replacement communication cables shall not be installed closer than 6 feet (1.83m) horizontally to the nearest inner edge of a body of water.
<i>Permanent barrier</i>	4.6.11.4.1	Exception (a): A communication cable may be used within 6 feet of the nearest edge of a body of water if a permanent floor, wall, ceiling, or roof exists between the body of water and any part of the cord that is within 6 feet (1.83m) of the body of water.
<i>Enclosed Conduit</i>	4.6.11.4.2	Exception (b): A communication cable may be used within 6 feet (1.83m) of the nearest edge of a body of water where the cable is completely enclosed in rigid conduit, intermediate conduit, or electrical metallic tubing for the entire length that is within 6 feet (1.83m) horizontally of the nearest inner edge of a body of water.

## **4.7 Recirculation and Water Treatment**

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<i>Decks and Equipment</i>	<b>4.8</b>	<b>Decks and Equipment</b>	
<i>Decks</i>	<b>4.8.1</b>	<b>Decks</b>	
	<b>4.8.1.1</b>	<b><i>Cross Connection Control (Deck Drains)</i></b>	
<i>Deck Drains</i>	4.8.1.1.1	There shall be no direct connection between the AQUATIC VENUE DECK drains and the sanitary sewer system, or the AQUATIC VENUE gutter or recirculation system.	A
<i>Materials/Slip Resistance</i>	<b>4.8.1.2</b>	<b><i>Materials/Slip Resistance</i></b>	
<i>Reduce Tripping Hazards</i>	4.8.1.2.1	All walking surfaces shall be designed to reduce tripping hazards.	A
<i>Textured Surface</i>	4.8.1.2.2	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.	
<i>Not Rough</i>	4.8.1.2.3	The walking surface shall not be rough so as to cause injury or discomfort to BATHERS.	
	<b>4.8.1.3</b>	<b><i>Deck Size/Width</i></b>	
	<b>4.8.2</b>	<b><i>Diving Boards and Platforms</i></b>	
	<b>4.8.3</b>	<b><i>Starting Blocks</i></b>	
	<b>4.8.4</b>	<b><i>Deck Slides</i></b>	
	<b>4.8.5</b>	<b><i>Lifeguard-Related</i></b>	
	<b>4.8.6</b>	<b><i>Fencing</i></b>	
	<b>4.8.7</b>	<b><i>AQUATIC VENUE Cleaning System</i></b>	
<i>Filter/Equipment Room</i>	<b>4.9</b>	<b><i>Filter/Equipment Room</i></b>	
<i>Chemical Storage and Handling</i>	<b>4.9.1</b>	<b><i>Chemical Storage and Handling</i></b>	
<i>Meet Local Building Codes</i>	4.9.1.1	All chemical STORAGE areas shall meet local building and fire CODES.	A
<i>Meet NFPA 5000</i>	4.9.1.1.1	In the absence of local CODES, all chemical STORAGE areas shall meet NFPA 5000: Building Construction and Safety Code requirements.	

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<i>Meet ASHRAE Codes</i>	4.9.1.2	All air handling in chemical STORAGE areas shall meet local building CODES and/or American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standards.	A
<i>Ventilation</i>	4.9.1.3	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.	A
<i>No Flow Deactivation</i>	4.9.1.4	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.	A
<i>Security</i>	4.9.1.5	The chemical STORAGE and pump room shall be secured to prevent unauthorized access.	B
<i>Eyewash and Shower</i>	4.9.1.6	Chemical STORAGE and pump rooms shall be equipped with an appropriate emergency shower and eyewash station in proximity to the chemical STORAGE rooms in accordance with ANSI Z358.1-2004 (Standard for Emergency Eyewashes and Shower Equipment).	A

**4.10 Hygiene Facilities**  
**4.11 Water Supply/Wastewater Disposal**  
**4.12 Specific Venues – Special Requirements**

## Model Aquatic Health Code: Risk Management/Safety Module 5.0 Operation and Maintenance

Keyword	Section	Code	Grade
	<b>5.0</b>	<b>Operation and Maintenance</b>	
	<b>5.1</b>	<b>Plan Submittal</b>	
	<b>5.2</b>	<b>Materials</b>	
	<b>5.3</b>	<b>Equipment Standards</b>	
	<b>5.4</b>	<b>AQUATIC VENUE Operation and Facility Maintenance</b>	
	<b>5.5</b>	<b>AQUATIC VENUE Structure (Shell)</b>	
<i>Indoor/Outdoor Environment</i>	<b>5.6</b>	<b>Indoor/Outdoor Environment</b>	
<i>Lighting</i>	<b>5.6.1</b>	<b>Lighting</b>	
<i>Equipment</i>	<b>5.6.1.1</b>	<b>Equipment and Light Levels</b>	
<i>Good Condition</i>	5.6.1.1.1	Lighting equipment shall be maintained in good condition and at the levels established in MAHC 4.6.1.	
<i>Light levels</i>	5.6.1.1.2	Light levels shall be maintained as designed.	
<i>Night swimming</i>	<b>5.6.1.3</b>	<b>Night Swimming</b>	
<i>Hours</i>	5.6.1.3.1	Night swimming shall be considered one half hour before sunset to one half hour after sunrise.	
<i>Water surface</i>	<b>5.6.1.4</b>	<b>Water Surface</b>	
<i>Emergency Lighting</i>	<b>5.6.1.5</b>	<b>Emergency Lighting</b>	
<i>Tested and Maintained</i>	5.6.1.5.1	Emergency lighting shall be tested and maintained according to manufacturer's recommendations.	
	<b>5.6.1.6</b>	<b>Glare</b>	B
	<b>5.6.2</b>	<b>Ventilation</b>	
	<b>5.6.3</b>	<b>Electrical</b>	
	<b>5.6.4</b>	<b>Heating</b>	
	<b>5.6.5</b>	<b>First Aid Room</b>	
<i>Emergency Exit</i>	<b>5.6.6</b>	<b>Emergency Exit</b>	

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<i>Emergency Exit Routes</i>	5.6.6.1	Emergency exit routes shall be established for both indoor and outdoor facilities and be maintained so that they are well lit, unobstructed and accessible at all times.	
	<b>5.6.7</b>	<b>Drinking Fountains</b>	
	<b>5.6.8</b>	<b>Garbage Receptacles</b>	
	<b>5.6.9</b>	<b>Food and Drink Concession</b>	
	<b>5.6.10</b>	<b>Spectator Areas</b>	
	<b>5.7</b>	<b>Recirculation and Water Treatment</b>	
	<b>5.7.1</b>	<b>Recirculation Systems and Equipment</b>	
	<b>5.7.2</b>	<b>Filtration</b>	
	<b>5.7.3</b>	<b>Disinfection</b>	
	<b>5.7.4</b>	<b>Water Quality</b>	
	<b>5.7.4.1</b>	<b>Sample Collection and Analysis</b>	
	<b>5.7.4.2</b>	<b>Microbiological Quality</b>	
	<b>5.7.4.3</b>	<b>Chemical Quality</b>	
	<b>5.7.4.4</b>	<b>Saturation Index for Swimming AQUATIC VENUES</b>	
	<b>5.7.4.5</b>	<b>Water Clarity</b>	
<i>Water Temperature</i>	<b>5.7.4.6</b>	<b>Water Temperature</b>	A
<i>Minimize risk and protect safety</i>	5.7.4.6.1	Water temperatures shall be maintained to minimize risk and ensure SAFETY of the patrons.	
<i>Spa Temperature</i>	5.7.4.6.2	The maximum temperature for an AQUATIC FEATURE is 104° F (40°C).	A
<i>Temperature for usage</i>	5.7.4.6.3	Water temperatures shall be considered and planned for based on SAFETY, priority facility usage, and age of participants, while managing water quality concerns.	C
<i>Spectator Areas</i>	<b>5.8.1</b>	<b>Spectator Areas (Decks)</b>	
<i>Cross-Connection Control</i>	<b>5.8.1.1</b>	<b>Cross-Connection Control</b>	
<i>Deck Drains</i>	5.8.1.1.1	Cross connection devices such as check valves shall be in good working order.	A
<i>Deck Slip Resistance</i>	<b>5.8.1.2</b>	<b>Materials/Slip Resistance</b>	A
<i>Clean and Good Repair</i>	5.8.1.2.1	Surfaces shall be clean and in good repair.	
<i>Risk Management</i>	5.8.1.2.2	The finish and profile of deck surfaces shall be maintained to prevent slips and falls.	

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<i>Tripping Hazards</i>	5.8.1.2.3	Tripping hazards shall be repaired immediately.	
	<b>5.8.2</b>	<b>Diving Boards and Platforms</b>	
	<b>5.8.3</b>	<b>Starting Blocks</b>	
	<b>5.8.4</b>	<b>Deck Slides</b>	
	<b>5.8.5</b>	<b>Lifeguard-Related</b>	
	<b>5.8.6</b>	<b>Fencing</b>	
	<b>5.8.7</b>	<b>Aquatic Venue Cleaning System</b>	
<i>Decks and Equipment</i>	<b>5.9</b>	<b>Decks and Equipment</b>	
<i>Chemical Handling and Storage</i>	<b>5.9.1</b>	<b>Chemical Storage</b>	
<i>Compliance with local codes</i>	5.9.1.1	Chemical STORAGE shall be in compliance with local building and fire CODES.	A
<i>Compliance with OSHA and EPA</i>	5.9.1.2	Chemical handling shall be in compliance with OSHA and EPA regulations.	A
<i>Compliance with MSDS</i>	5.9.1.3	For each chemical, STORAGE, handling and use of the chemical shall be in compliance with the manufacturer's Material Data Safety Sheets (MSDS) and labels.	A
<i>Access prevention</i>	5.9.1.4	AQUATIC VENUE chemicals shall be stored to prevent access by unauthorized individuals.	A
<i>Protection from getting wet</i>	5.9.1.5	AQUATIC VENUE chemicals shall be stored so that they are protected from getting wet.	A
<i>No mixing of incompatibles</i>	5.9.1.6	AQUATIC VENUE chemicals shall be stored so that if the packages were to leak, no mixing of incompatible materials would occur.	A
<i>MSDS</i>	5.9.1.6.1	Material Data Safety Sheets (MSDS) shall be consulted for incompatibilities.	
<i>Storage of ignition sources</i>	5.9.1.7	Possible ignition sources (e.g., welding equipment), including but not limited to gasoline, diesel, or gas-powered equipment such as lawn mowers, motors, grills, or portable stoves shall not be stored in the chemical STORAGE area.	A
<i>Smoking prohibition</i>	5.9.1.8	Smoking shall be prohibited in the chemical STORAGE area.	A

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<i>Lighting in room</i>	5.9.1.9	Lighting shall be sufficient to read labels on containers throughout the chemical STORAGE area and pump room.	A
<i>PPE</i>	5.9.1.10	Personal Protective Equipment (PPE) shall be available as indicated on the chemical MSDS's.	A
<i>Storage away from sunlight</i>	5.9.1.11	Chemicals shall be stored away from direct sunlight, temperature extremes, and high humidity.	
<i>Separate rooms</i>	5.9.1.12	The chemical STORAGE room shall be separate from the filter room.	A
<i>Single Container</i>	5.9.1.13	A single container of a chemical that has been opened and that is currently in use in the pump room may be kept in a staging area of the pump room only when the chemicals will be protected from exposure to heat and moisture.	
<i>Waived</i>	5.9.1.13.1	<i>For small recreational water facilities that do not currently have a chemical STORAGE area separate from the pump room, this requirement may be waived at the discretion of the local public health and/or fire officials if the chemicals are protected from exposure to heat and moisture and no imminent health or safety threats are identified.</i>	
<i>Warning signs</i>	5.9.1.14	Warning signs in compliance with NFPA or HMIS ratings shall be posted on chemical STORAGE room doors.	B
<i>Chemical Handling</i>	<b>5.9.2</b>	<b>Chemical Handling</b>	
<i>Label identity of material</i>	5.9.2.1	Containers of chemicals shall be labeled, tagged, or marked with the identity of the material and a statement of the hazardous effects of the chemical.	A
<i>Labeling</i>	5.9.2.2	All AQUATIC VENUE chemical containers shall be labeled.	A
<i>Chemical Additions</i>	5.9.2.3	The chemicals used in controlling the quality of water shall be NSF 50 approved and used only in accordance with the manufacturer's instructions.	A

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<i>No hand fed chemicals</i>	5.9.2.4	Chemicals shall never be hand-fed directly into the AQUATIC VENUE while open to the public.	A
<i>Measuring Devices</i>	5.9.2.5	Measuring devices and containers for each chemical shall be used.	A
<i>Clean and Dry</i>	5.9.2.5.1	These measuring devices shall be clean, dry and constructed of material compatible with the chemical to be measured to prevent the introduction of incompatible chemicals.	
<i>No mixing</i>	5.9.2.6	Chemicals shall not be mixed with solid or liquid chlorine compounds.	A
<i>Feeders</i>	5.9.2.7	All chemical feed systems must be dedicated to a single chemical and clearly labeled to prevent the introduction of incompatible chemicals	A
<i>Operate with Filter Pump</i>	5.9.2.8	A chemical feeder shall be installed so it cannot operate unless the filter pump is running.	A
<i>Failure-proof Features</i>	5.9.2.8.1	Feeders shall incorporate failure-proof features so the chemicals cannot feed directly into the AQUATIC VENUE, the VENUE piping system, water supply system, or AQUATIC VENUE enclosure under any type of failure or interruption of operation of the equipment to prevent BATHER exposure to high concentrations of AQUATIC VENUE treatment chemicals.	
<i>Use of controller</i>	5.9.2.9	A controller capable of measuring the sanitizer residual (or surrogate such as ORP) shall be used to maintain the sanitizer residual in spas.	A
<i>Maintained</i>	5.9.2.9.1	Controllers shall be maintained and calibrated as necessary.	

**5.10****Hygiene Facilities****5.11****Water Supply/Wastewater Disposal****5.12****Specific Venues, Special Requirements**

**Model Aquatic Health Code:  
Risk Management Module  
6.0 Policies and Management**

Keyword	Section	Code	Grade
	<b>6.0</b>	<b>Policies and Management</b>	
<i>Operator Training</i>	<b>6.1</b>	<b>Operator Training</b>	
<i>Chemical Storage Training</i>	6.1.1	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 annual training for the following:	A
<i>Storage and handling procedures</i>	6.1.1.1	Procedures for chemical STORAGE and handling outlined in this CODE.	A
<i>PPE procedures</i>	6.1.1.2	Universal Precautions, 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.	A
<i>Spill procedures</i>	6.1.1.3	Spill Procedures and Emergency Response outlined in this CODE. (Will list specific sections when code is complete.)	A
<i>OHSA requirements</i>	6.1.1.4	Federal OSHA Requirements: Hazard Communication Standard (Employee Right-to-Know) and Material Data Safety Sheets (MSDS). Know the location and availability of the written program.	A
<i>Chemical and MSDS lists</i>	6.1.1.5	Know workplace chemicals list and Material Data Safety Sheets (MSDS).	A

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<i>Training plan</i>	6.1.1.6	Employers shall have a training plan in place and implement training for employees on chemicals used at the facility before their first assignment and whenever a new hazard is introduced into the work area. The training shall include at a minimum:	A
		<ol style="list-style-type: none"> <li>1) How to recognize and avoid chemical hazards;</li> <li>2) The physical and health hazards of chemicals used at the facility;</li> <li>3) How to detect the presence or release of a hazardous chemical;</li> <li>4) Required PPE necessary to avoid the hazards and training in use of PPE; and</li> <li>5) How to read and understand the labels or other forms of warning and MSDSs.</li> </ol>	
<i>Training records</i>	6.1.1.7	Records of all training should be recorded and maintained on file.	A
<i>Body fluid exposure</i>	6.1.1.8	Employees assigned to roles which have the potential for an occupational exposure to bloodborne pathogens or other germs shall be trained to recognize and respond to RWI, BBP, and vomit in and around the AQUATIC VENUE area.	A
<i>Exposure Control Program</i>	6.1.1.9	Employers shall have an Exposure Control Program for BBP.	
<i>PPE Provided and Disposed</i>	6.1.1.10	Personal Protective Equipment (PPE) shall be provided and properly disposed of.	
	<b>6.2</b>	<b>Lifeguard Training</b>	
	<b>6.3</b>	<b>Facility Staffing</b>	
	<b>6.3.1</b>	<b>Operators: Staff Requirements and Availability</b>	
	<b>6.3.2</b>	<b>Lifeguards: Staff Requirements and Availability</b>	
	<b>6.3.3</b>	<b>Staff Management</b>	
<i>Staff Management Emergency Response Plans</i>	<b>6.3.3.1</b>	<b><i>Emergency Response and Communications Plans</i></b>	

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<i>Emergency Response and Communication Plan</i>	6.3.3.1.1	AQUATIC FACILITIES shall create and maintain operating procedures manual containing information on the emergency response and communications plan including an Emergency Action Plan (EAP), Facility Evacuation Plan, and Inclement Weather Plan.	A
<i>Emergency Action Plan</i>	6.3.3.1.2	A written EAP shall be developed, maintained, and updated as necessary for the facility.	
<i>Annual review and update of EAP</i>	6.3.3.1.3	The EAP shall be reviewed with the facility staff and management annually or more frequently as required when changes occur with the dates of the review indicated at the bottom of the EAP.	B
<i>EAP must be available for inspection</i>	6.3.3.1.4	The written EAP shall be kept at the facility and available for emergency personnel/AUTHORITY HAVING JURISDICTION upon request.	B
<i>EAP training and documentation</i>	6.3.3.1.5	The written EAP shall include training frequency and documentation of those who have been trained.	B
<i>EAP Components</i>	6.3.3.1.6	The EAP shall include at a minimum: <ol style="list-style-type: none"> <li>1) A diagram of the facility;</li> <li>2) A list of emergency telephone numbers;</li> <li>3) The location of first aid kit and other rescue equipment (bag valve mask, AED if provided, backboard, etc.);</li> <li>4) An emergency response plan for accidental chemical release.</li> </ol>	A
<i>Accidental Chemical Release Plan</i>	6.3.3.1.6.1	The accidental chemical release plan shall include procedures for response and cleanup, provision for training staff in these procedures, and a list of equipment and supplies for clean-up.	
<i>Remediation Supplies</i>	6.3.3.1.6.2	The availability of equipment and supplies for remediation procedures shall be verified by the operator at least weekly.	
<i>Facility Evacuation Plan</i>	6.3.3.1.7	A written Facility Evacuation Plan shall be developed and maintained for the facility.	A

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<i>Evacuation Plan Components</i>	6.3.3.1.7.1	This plan shall include at a minimum: <ol style="list-style-type: none"> <li>1) Actions to be taken in cases of drowning, serious illness or injury, chemical handling accidents, weather emergencies, and other serious incidents; and</li> <li>2) Defined roles and responsibilities for all staff.</li> </ol>	
<i>Communication plan</i>	6.3.3.1.8	A communication plan must exist to facilitate activation of internal emergency response centers and/or community 911 as necessary.	A
<i>Communication Plan Components</i>	6.3.3.1.8.1	At a minimum, this plan shall include: <ol style="list-style-type: none"> <li>1) Provision and use of readily accessible, appropriate communication devices such as telephones, call boxes, and mobile devices;</li> <li>2) Signage;</li> <li>3) Procedures to be followed during staffed and unstaffed time periods;</li> <li>4) Acceptable alternative communication during loss of power; and</li> <li>5) Training of all personnel.</li> </ol>	
<i>Notification Procedures</i>	6.3.3.1.8.2	The communications plan shall include a plan for notification to Federal, State, and local agencies in case of a chemical spill that exceeds the EPA reportable quantity.	
<i>Incident Weather Plan</i>	6.3.3.1.9	Aquatic facilities shall have a contingency/response plan for localized weather events that may affect their operation (i.e. lightning, hurricanes, tornados, high winds, etc.).	A
<i>Contingency Plan</i>	6.3.3.1.9.1	Contingency plans shall include training for employees, evacuation procedures, and determining when it is acceptable to re-open a facility for operation.	
<i>Remote Monitoring Systems</i>	<b>6.3.3.2</b>	<b><i>Remote Monitoring Systems</i></b>	

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<i>As an aid, not substitute</i>	6.3.3.2.1	<i>Remote monitoring safety systems may be used to aid the operation but not in lieu when critical areas such as blind spots in an AQUATIC VENUE or area of slide cannot be viewed by lifeguard/slide operators.</i>	C
<i>Remote Monitoring Staff Training</i>	6.3.3.2.2	When remote monitoring safety systems are used, the AQUATIC FACILITY staff shall be trained on their use and response.	
<i>Operator-Based</i>	6.3.3.2.3	Operator-based remote water quality monitoring systems shall not be a substitute for manual testing of the AQUATIC VENUE.	C
<i>Lifeguard-Based</i>	6.3.3.2.4	Lifeguard-based remote monitoring shall not a substitute for a lifeguard present when conditions deem a lifeguard is necessary.	C
<i>Employee Illness and Injury Policy</i>	<b>6.3.3.3</b>	<b><i>Employee Illness and Injury Policy</i></b>	
<i>Illness Policy</i>	6.3.3.3.1	Operators shall not permit employees who are ill with diarrhea in the water or in a lifeguard role.	A
<i>Open Wounds</i>	6.3.3.3.2	Operators shall not permit employees with open wounds in the water or in a lifeguard role.	
	<b>6.4</b>	<b>Facility Management</b>	
	<b>6.4.1</b>	<b>Operators</b>	
	<b>6.4.1.1</b>	<b>Operations Manual</b>	
	<b>6.4.1.2</b>	<b>System Check Program</b>	
<i>Recordkeeping</i>	<b>6.4.1.3</b>	<b>Recordkeeping</b>	
<i>Daily Operating Records</i>	6.4.1.3.1	Operators of public swimming AQUATIC VENUES shall keep records pertaining to the operation and maintenance of the VENUE which they operate.	A
<i>Made Available</i>	6.4.1.3.2	Operation and maintenance records shall be maintained daily during periods when the AQUATIC VENUE is open, shall be retained by the operator, and made available to the AHJ on request.	
<i>State and Company Policy</i>	6.4.1.3.3	Operation and maintenance records shall be retained according to the states statute of limitations and company policy.	

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<i>Chemical inventory log</i>	6.4.1.3.4	A chemical inventory log shall be maintained to provide a list of chemicals and approximate quantities on site.	B
<i>Patron Management</i>	<b>6.4.2</b>	<b>Patron-Related Management Aspects</b>	
<i>Bather Load</i>	<b>6.4.2.1</b>	<b><i>Bather Load</i></b>	
<i>User Guidelines</i>	6.4.2.1.1	Facilities that typically operate with low bather occupancy shall have a plan in place to adjust to potential higher patron use.	A
<i>Maximum Bather Load</i>	6.4.2.1.2	Such plans shall not exceed the maximum designed BATHER load.	
<i>Signage</i>	<b>6.4.2.2</b>	<b><i>Signage</i></b>	A
<i>Venue Rules</i>	6.4.2.2.1	The operator shall post and enforce the AQUATIC VENUE rules governing SAFETY and sanitation.	
<i>Conspicuous Place</i>	6.4.2.2.2	Rules shall be posted in a conspicuous place near the entrance to the AQUATIC VENUE area and the dressing room.	
<i>Lettering</i>	6.4.2.2.3	The lettering shall be legible and at least 1 inch (12.5mm) (36 point type) high, with a contrasting background.	

*Sign messages* 6.4.2.2.4 AQUATIC VENUE signs shall have the following included on the sign:

- 1) In case of an emergency dial 911
- 2) Hours of operation; AQUATIC FACILITY use prohibited at any other time
- 3) BATHER capacity
- 4) Pollution of swimming AQUATIC VENUE prohibited
- 5) Do not swim if you have open wounds or are ill with diarrhea or have had diarrhea within the past two weeks
- 6) Shower before entering
- 7) No glass or shatterable items in the AQUATIC VENUE or on the AQUATIC VENUE DECK
- 8) No animals in the AQUATIC VENUE or on the AQUATIC VENUE DECK
- 9) No Lifeguard on Duty (if lifeguard is not provided)
- 10) AQUATIC VENUES without an approved diving well configuration shall have "NO DIVING", in four inch letters included with the above listed AQUATIC VENUE rules and the international "no diving symbol.

*Movable Bottom Floor Signage* 6.4.2.2.5 At a minimum, AQUATIC VENUES with moveable bottom floors shall have the following signage:

- 1) A sign for AQUATIC VENUE water depth in use shall be provided and clearly visible.
- 2) A "NO DIVING" sign shall be provided.
- 3) The floor is movable and AQUATIC VENUE depth varies.

*Spa venue signs* 6.4.2.2.6 At a minimum, spa VENUES shall have the following on their signs in addition to the AQUATIC VENUE requirements.

- 1) Pregnant women, small children, people with health problems (more detail) and people using alcohol, narcotics or other drugs that cause drowsiness should not use spa AQUATIC VENUES without first consulting a doctor.
- 2) Maximum water temperature is 104° F (40°F).
- 3) Children under 12 years of age shall be accompanied by an adult.

*Hygiene Facility Signage* 6.4.2.2.7 Signage shall be posted at HYGIENE FACILITY exit used to access AQUATIC VENUES stating:

- 1) Do not swim when ill with diarrhea.
- 2) Do not swim with open wounds and sores.
- 3) Shower before entering the water.
- 4) Check your child's swim diapers/rubber pants.
- 5) Diaper changing on the AQUATIC VENUE DECK is prohibited.
- 6) Do not poop or pee in the water.
- 7) Do not swallow or spit water.

**6.4.2.3**

***User Guidelines***

**6.4.2.4**

***Swimmer Empowerment Methods***

**6.6**

***Inspections***

*Inspections*

B

General Safety  
Inspections

6.6.1.1

The operator shall develop inspections for opening and closing the AQUATIC VENUE for the following items: B

- 1) Walkways/deck and exits are clear, clean, free of debris;
- 2) Doors to nonpublic areas (chemical storage, offices, etc.) are locked (refer to chemical STORAGE & handling for details on proper STORAGE, labeling, etc.);
- 3) First aid supplies are stocked;
- 4) Signage is in good condition and properly displayed;
- 5) Communications equipment (whistles, phones, radios) is available and/or in good condition;
- 6) Barriers including fences and gates are in good condition with self latch lock functioning properly, and barriers do not have nearby furniture to encourage climbing;
- 7) Drinking fountains are clean and in good condition;
- 8) Lighting that is provided for indoor and outdoor facilities is functioning properly; and,
- 9) Electrical devices including GFCI, electrical panels, outlets, radios, laptops, video, TV, or other electrical equipment are not in proximity to the water.

*AQUATIC VENUES,  
Multi-Attraction  
Facilities, and  
Waterparks  
Inspections*

6.6.1.2

FOR AQUATIC VENUES, Multi-Attraction Facilities, and Waterparks:

B

- 1) Play structures and diving boards are in good condition;
- 2) SAFETY equipment is in good condition, properly secured, accessible for intended use, and shall include at a minimum:
  - Rescue tubes,
  - Resuscitation masks,
  - First aid kits,
  - AED's,
  - Emergency oxygen,
  - Backboard, head immobilizer, straps,
  - Lifeguard stands;
- 3) Emergency shut-off systems (slides, water features, pumps, etc.) function properly;
- 4) Depth markings are clearly visible;
- 5) Lifelines and buoys are in place and in good working order;
- 6) Ladders are non slip and rungs secured tightly;
- 7) Waterslides are in good condition;
- 8) Diving boards are non-slip and secure;
- 9) Movable fulcrum is all the way forward and secured to control spring in board;
- 10) Moveable starting blocks are properly stored;
- 11) Access to permanent starting blocks is restricted or controlled when not in use by swim teams and prohibited when not in use by competitive swimming or swimming practice that is under direct supervision of an instructor or coach;
- 12) Railings are secure;
- 13) Drain covers are secured and undamaged;
- 14) SVR is functioning properly;
- 15) Skimmer baskets and covers are clean and in place;
- 16) Water quality and clarity is satisfactory;
- 17) Water level is at an appropriate level;
- 18) Pumps retain the appropriate pressure;
- 19) Play structures are secure (consider water velocity and reference manufacturers recommended levels);
- 20) Verify required documentation and records are in place and signed by the appropriate personnel.

### **Codes in this Module:**

ANSI/IAF-9

ANSI/NSPI-1

ANSI Z358.1-2004 (Standard for Emergency Eyewashes and Shower Equipment).

NFPA 5000: Building Construction and Safety Code requirements

NFPA 704

NSF 50

OSHA 1910.1030 Bloodborne Pathogens

DRAFT

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