This version of the MAHC Risk Management Module has been modified based on the first round of public comments received. It is being re-posted so users can view how it was modified but is not currently open to public comment. 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 public comments and MAHC responses can be viewed on the web at http://www.cdc.gov/healthywater/swimming/pools/mahc/structure-content/index.html

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.

The following chart shows the context of Risk Management module in the overall Model Aquatic Health Code’s Strawman Outline (http://www.cdc.gov/healthywater/pdf/swimming/pools/mahc/structure-content/mahc-strawman.pdf).

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6.6 Inspections

Acronyms and Initialisms Used 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
- NFPA: National Fire Protection Association
- ORP: Oxidation-Reduction Potential
- OSHA: Occupational Safety and Health Administration
- PPE: Personal Protective Equipment
- RWI: Recreational Waterborne Illnesses
- SVRS: Safety Vacuum Release System

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

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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.”

“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.

“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+) and hydroxide ions (OH-). 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 health and 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.
### Model Aquatic Health Code
#### Risk Management/Aquatic Health Module
#### 4.0 Design Standards and Construction

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#### Location

**4.5.5.1 Location of Depth Markings**

#### Visible

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.

#### Depth Measurements

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 when AQUATIC VENUE has minimal wall intrusion with the floor or measured beyond the radius of curvature of coving when representing AQUATIC VENUE depth with radius coved AQUATIC VENUE construction.

##### Dual Marking System

4.5.5.1.2.1 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.

##### Depth Markings

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.

##### Legible

4.5.5.1.4 Depth markings shall be legible from inside the AQUATIC VENUE and also from the AQUATIC VENUE DECK.

##### Maximum

4.5.5.1.5 The maximum perimeter distance between depth

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Risk Management CODE Modified after Public Comments

markedings shall be 25 feet (7.62m) or as determined during the plan review process for unique pool size and geometry.

Location 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.

Position 4.5.5.1.6.1 Depth markers shall be positioned so as to be read while facing water’s edge.

Non-traditional Aquatic Venues 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 shall be indicated on a sign at the entry to such an AQUATIC VENUE.

Requirements for Depth Markings 4.5.5.2 Requirements for Depth Markings

Color and height 4.5.5.2.1 Depth markers shall be permanent markings, contrasting in color, and at least 4 inches (10cm) in height.

Slip resistant 4.5.5.2.2 Depth markers on walking surfaces shall be slip resistant.

Unit of Measurement 4.5.5.2.3 Depth markers shall indicate the unit of measurement in feet, inches, or meters.

Spa Depth Markers 4.5.5.2.4 Depth markers for a spa shall meet the above requirements. Small spas less than 200 square feet (61m) do not require depth markers or “No Diving” signs.

Wading Pool Depth Markers 4.5.5.2.5 AQUATIC VENUES such as wading pools and water activity areas or AQUATIC FEATURES (aqua play) are not required to have depth markings or no diving signage if water depth is 6 inches (15.2cm) of water or less.

Movable Floor Depth Markers 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 visible from the deck.

Movable Floors 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.

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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.

Abbreviations

Abbreviations for units of measure including feet, inches, and meters shall be acceptable to use on water depth signs.

No Symbols for Feet and Inches

Symbols for feet (') and inches (") shall not be permitted on water depth signs to avoid confusion.

No Diving Symbol

AQUATIC VENUES without an approved diving well configuration as defined by FINA or their local certifying agency shall have the international “NO DIVING” symbol.

No Diving Symbol Location

NO DIVING symbols shall also be installed every 25 feet (7.62m) except in AQUATIC FEATURES where diving is permitted.

Indoor/Outdoor Environment

Lighting

Artificial lighting shall be provided at all AQUATIC VENUES which are to be used at night or which do not have adequate natural lighting.

Aquatic Venue Floor

Lighting shall illuminate all parts of the floor of the AQUATIC VENUE to enable a lifeguard or other person to determine whether a BATHER is on the floor of the AQUATIC VENUE.

Aquatic Venue Illumination

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.

Underwater Lighting

Underwater lighting shall fully illuminate the AQUATIC VENUE floor and drains.

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Emergency Exit 4.6.6.1 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.

Labeling 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."

Telephone 4.6.11 Telephone

Emergency Capabilities 4.6.11.1 A telephone capable of directly dialing 911 Emergency Personnel shall be provided and accessible to all AQUATIC VENUE users.

Trained Staff 4.6.11.1.1 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.

Permanently Affixed 4.6.11.2 The emergency telephone shall be permanently affixed to a location inside the AQUATIC VENUE enclosure or outside the enclosure within 100 feet (30.5m) of a BATHER entrance and visible from within the AQUATIC VENUE enclosure.

Not Visible 4.6.11.2.1 If emergency telephone is not visible, signage shall clearly indicate phone location.

Signage 4.6.11.3 A sign shall be posted at the telephone providing dialing instructions, address and location of the AQUATIC VENUE location, and the telephone number.
### Risk Management CODE Modified after Public Comments

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#### 4.6.11.4 Replacement
Replacement communication cables shall not be installed closer than 6 feet (1.83m) horizontally to the nearest inner edge of a body of water.

#### 4.6.11.4.1 Exception (a): Permanent Barrier
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.

#### 4.6.11.4.2 Exception (b): Enclosed Conduit
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

#### 4.8 Decks and Equipment

#### 4.8.1 Decks

#### 4.8.1.1 Cross Connection Control
There shall be no direct connection between the AQUATIC VENUE DECK drains and the sanitary or storm sewer system, or the AQUATIC VENUE gutter or recirculation system. If the AHJ requires an outdoor pool to have deck drains that discharge to a storm sewer system, ground surface, or holding pond, they shall do so through an air-gap.

#### 4.8.1.2 Materials/Slip Resistance

#### 4.8.1.2.1 Textured Surface
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.

#### 4.8.1.3 Deck Size/Width

#### 4.8.2 Diving Boards and Platforms

#### 4.8.3 Starting Blocks

#### 4.8.4 Deck Slides

#### 4.8.5 Lifeguard-Related

#### 4.8.6 Fencing
### Chemical Storage

**Meet Local Building Codes**

4.9.1.1 All chemical STORAGE areas shall meet applicable local building and fire CODES.

**Meet NFPA 5000**

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, or IBC Section 307.

**Meet ASHRAE Codes**

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.

**Ventilation**

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.

**No Flow Deactivation**

4.9.1.4 The chemical feed system shall be designed so that all chemical feed pumps or generators will be deactivated when there is no or low flow in the recirculation system.

**Security**

4.9.1.5 The chemical STORAGE and pump room shall be secured to prevent unauthorized access.

**Eyewash and Shower**

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) when required by the manufacturer’s MSDS.

### Chemical Handling

4.9.2 Chemical Handling

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

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<td>Light levels</td>
<td>5.6.1.2.2</td>
<td>Light levels shall be maintained as designed.</td>
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<tr>
<td>Underwater Lighting</td>
<td>5.6.1.3</td>
<td>Underwater Lighting</td>
<td></td>
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<tr>
<td>Hours</td>
<td>5.6.1.3.1</td>
<td>Night swimming shall be considered one half hour before sunset to one half hour after sunrise.</td>
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<tr>
<td>Water surface</td>
<td>5.6.1.4</td>
<td>Water Surface</td>
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<tr>
<td>Emergency Lighting</td>
<td>5.6.1.5</td>
<td>Emergency Lighting</td>
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<tr>
<td>Tested and</td>
<td>5.6.1.5.1</td>
<td>Emergency lighting shall be tested and maintained</td>
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<tr>
<th>Keyword Maintained</th>
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<tr>
<td>5.6.2</td>
<td>Ventilation</td>
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<td>5.6.3</td>
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<td>5.6.4</td>
<td>Heating</td>
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<td>5.6.5</td>
<td>First Aid Room</td>
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<td>5.6.6</td>
<td>Emergency Exit</td>
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<tr>
<td>5.6.6.1</td>
<td>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.</td>
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<td>5.6.7</td>
<td>Drinking Fountains</td>
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<td>5.6.8</td>
<td>Garbage Receptacles</td>
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<td>5.6.9</td>
<td>Food and Drink Concession</td>
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<td>5.6.10</td>
<td>Spectator Areas</td>
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<td>5.6.11</td>
<td>Telephone</td>
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<td>5.7</td>
<td>Recirculation and Water Treatment</td>
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<tr>
<td>5.7.1</td>
<td>Recirculation Systems and Equipment</td>
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<td>5.7.2</td>
<td>Filtration</td>
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<td>5.7.3</td>
<td>Disinfection</td>
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<td>5.7.4</td>
<td>Water Quality</td>
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<tr>
<td>5.7.4.1</td>
<td>Sample Collection and Analysis</td>
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<tr>
<td>5.7.4.2</td>
<td>Microbiological Quality</td>
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<tr>
<td>5.7.4.3</td>
<td>Chemical Quality</td>
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<tr>
<td>5.7.4.4</td>
<td>Saturation Index for Swimming Aquatic Venues</td>
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<tr>
<td>5.7.4.5</td>
<td>Water Clarity</td>
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<tr>
<td>5.7.4.6</td>
<td>Water Temperature A</td>
<td></td>
<td></td>
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</tbody>
</table>

5.7.4.6.1 Water temperatures shall be maintained to minimize risk and ensure SAFETY of the patrons.

5.7.4.6.2 The maximum temperature for an AQUATIC FEATURE is 104º F (40°C).

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.

5.8                      | Decks and Equipment |
| 5.8.1                    | Decks |
| 5.8.1.1                  | Cross-Connection Control |

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### Deck Drains

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>5.8.1.1</td>
<td>Cross connection devices such as check valves shall be in good working order, and shall be tested as required by the AHJ.</td>
<td>A</td>
</tr>
</tbody>
</table>

### Materials/Slip Resistance

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.8.1.2</td>
<td>Surfaces shall be clean and in good repair.</td>
<td>A</td>
</tr>
</tbody>
</table>

### Clean and Good Repair

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.8.1.2.2</td>
<td>The finish and profile of deck surfaces shall be maintained to prevent slips and falls.</td>
<td>A</td>
</tr>
</tbody>
</table>

### Tripping Hazards

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.8.1.2.3</td>
<td>Tripping hazards shall be avoided.</td>
<td>A</td>
</tr>
</tbody>
</table>

### Deck Size/Width

#### Local Codes

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9.1.1</td>
<td>Chemical STORAGE shall be in compliance with local building and fire CODES.</td>
<td>A</td>
</tr>
</tbody>
</table>

#### OSHA and EPA

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9.1.2</td>
<td>Chemical handling shall be in compliance with OSHA and EPA regulations.</td>
<td>A</td>
</tr>
</tbody>
</table>

#### MSDS

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9.1.3</td>
<td>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.</td>
<td>A</td>
</tr>
</tbody>
</table>

#### Access Prevention

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9.1.4</td>
<td>AQUATIC VENUE chemicals shall be stored to prevent access by unauthorized individuals.</td>
<td>A</td>
</tr>
</tbody>
</table>

#### Protected

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9.1.5</td>
<td>AQUATIC VENUE chemicals shall be stored so that they are protected from getting wet.</td>
<td>A</td>
</tr>
</tbody>
</table>

#### No Mixing

<table>
<thead>
<tr>
<th>Section</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9.1.6</td>
<td>AQUATIC VENUE chemicals shall be stored so that if the packages were to leak, no mixing of incompatible materials would occur.</td>
<td>A</td>
</tr>
</tbody>
</table>
Keyword: MSDS 5.9.1.6.1 Material Data Safety Sheets (MSDS) shall be consulted for incompatibilities.

**Ignition Sources**

5.9.1.7 Possible ignition sources (e.g., welding equipment), including but not limited to gasoline, diesel, natural gas, or gas-powered equipment such as lawn mowers, motors, grills, pool heaters, or portable stoves shall not be stored or installed in the chemical storage area.

**Smoking**

5.9.1.8 Smoking shall be prohibited in the chemical storage area.

**Lighting**

5.9.1.9 Lighting shall be at minimum 30 footcandles (323 lux) to allow operators to read labels on containers throughout the chemical storage area and pump room.

**PPE**

5.9.1.10 Personal Protective Equipment (PPE) shall be available as indicated on the chemical MSDS’s.

**Storage**

5.9.1.11 Chemicals shall be stored away from direct sunlight, temperature extremes, and high humidity.

**Separate**

5.9.1.12 The chemical storage room shall be separate from the filter room.

**Single Container**

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.

**Waiver**

5.9.1.13.1 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.

**Warning Signs**

5.9.1.14 Warning signs in compliance with NFPA or HMIS ratings shall be posted on chemical storage room doors.

**Chemical Handling**

5.9.2  

**Identity**

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 according to OSHA materials labeling requirements.

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</thead>
<tbody>
<tr>
<td>Labeling</td>
<td>5.9.2.1.1</td>
<td>All AQUATIC VENUE chemical containers shall be labeled according to OSHA materials labeling requirements.</td>
<td>A</td>
</tr>
<tr>
<td>NSF 50</td>
<td>5.9.2.2</td>
<td>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.</td>
<td>A</td>
</tr>
<tr>
<td>Measuring Devices</td>
<td>5.9.2.3</td>
<td>Chemicals shall be measured using a dedicated measuring device where applicable.</td>
<td>A</td>
</tr>
<tr>
<td>Clean and Dry</td>
<td>5.9.2.3.1</td>
<td>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.</td>
<td>A</td>
</tr>
<tr>
<td>No Mixing</td>
<td>5.9.2.4</td>
<td>Chemicals shall not be mixed together before adding to the pool.</td>
<td>A</td>
</tr>
<tr>
<td>Feeders</td>
<td>5.9.2.5</td>
<td>All chemical feed systems must be dedicated to a single chemical and clearly labeled to prevent the introduction of incompatible chemicals.</td>
<td>A</td>
</tr>
<tr>
<td>Filter Pump</td>
<td>5.9.2.6</td>
<td>A chemical feeder shall be installed so it cannot operate in low or no flow circumstances.</td>
<td>A</td>
</tr>
<tr>
<td>Failure-proof Features</td>
<td>5.9.2.6.1</td>
<td>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, low flow, or interruption of operation of the equipment to prevent BATHER exposure to high concentrations of AQUATIC VENUE treatment chemicals.</td>
<td>A</td>
</tr>
<tr>
<td>Use of Controller</td>
<td>5.9.2.7</td>
<td>A controller capable of measuring the disinfectant residual (free available chlorine or bromine) or surrogate such as ORP) shall be used to maintain the disinfectant residual in AQUATIC VENUES.</td>
<td>A</td>
</tr>
<tr>
<td>Maintained</td>
<td>5.9.2.7.1</td>
<td>Controllers shall be maintained and calibrated as necessary.</td>
<td>A</td>
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</tbody>
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<tbody>
<tr>
<td>5.10</td>
<td>Hygiene</td>
<td>Facilities</td>
<td></td>
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<tr>
<td>5.11</td>
<td>Water Supply/Wastewater Disposal</td>
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<tr>
<td>5.12</td>
<td>Specific Venues, Special Requirements</td>
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<tbody>
<tr>
<td><strong>Operator Training</strong></td>
<td><strong>6.1</strong></td>
<td><strong>Operator Training</strong></td>
<td></td>
</tr>
<tr>
<td>Chemical Storage</td>
<td>6.1.1</td>
<td>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 for the following topics discussed in MAHC Section 6.1.1.1 to 6.1.1.5:</td>
<td>A</td>
</tr>
<tr>
<td>Storage and Handling</td>
<td>6.1.1.1</td>
<td>Procedures for chemical STORAGE and handling outlined in this CODE.</td>
<td>A</td>
</tr>
<tr>
<td>PPE Procedures</td>
<td>6.1.1.2</td>
<td>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.</td>
<td>A</td>
</tr>
<tr>
<td>Spill Procedures</td>
<td>6.1.1.3</td>
<td>Spill Procedures and Emergency Response outlined in this CODE.</td>
<td>A</td>
</tr>
<tr>
<td>OHSA Requirements</td>
<td>6.1.1.4</td>
<td>Federal OSHA Requirements: Hazard Communication Standard (Employee Right-to-Know) and MSDS. Know the location and availability of the written program.</td>
<td>A</td>
</tr>
<tr>
<td>Chemical and MSDS Lists</td>
<td>6.1.1.5</td>
<td>Know workplace chemicals list and MSDS.</td>
<td>A</td>
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<tr>
<td>Training Plan</td>
<td>6.1.1.6</td>
<td>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:</td>
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<td></td>
<td>1) How to recognize and avoid chemical hazards;</td>
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<td></td>
<td></td>
<td>2) The physical and health hazards of</td>
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chemicals used at the facility;
3) How to detect the presence or release of a hazardous chemical;
4) Required PPE necessary to avoid the hazards
5) Use of PPE; and
6) How to read and understand the chemical labels or other forms of warning including MSDS sheets.

Training Records 6.1.1.7 Records of all training should be recorded and maintained on file. A

Body Fluid Exposure 6.1.1.8 Employees assigned to roles which have the potential for an occupational exposure to bloodborne pathogens, recreational water illnesses, or other germs shall be trained to recognize and respond to body fluid (blood, feces, vomit) releases in and around the AQUATIC VENUE area. A

Exposure Control Program 6.1.1.9 Employers shall have an Exposure Control Program for bloodborne pathogens as required by OSHA 1910.1030.

PPE Provided and Disposed 6.1.1.10 PPE shall be provided and properly disposed of.

6.2 Lifeguard Training
6.3 Facility Staffing
6.3.1 Operators: Staff Requirements and Availability
6.3.2 Lifeguards: Staff Requirements and Availability
6.3.3 Staff Management
6.3.3.1 Emergency Response and Communications Plans

Staff Management Emergency Response Plans 6.3.3.1.1 AQUATIC FACILITIES shall create and maintain an operating procedure manual containing information on the emergency response and communications plan including an EAP, Facility Evacuation Plan, and Inclement Weather Plan. A

Emergency Response and Communication Plan 6.3.3.1.2 A written EAP shall be developed, maintained, and updated as necessary for the facility.

Emergency Action Plan 6.3.3.1.3 The EAP shall be reviewed with the facility staff B

Annual Review 6.3.3.1.3

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and management annually or more frequently as required when changes occur with the dates of the review recorded in the EAP.

Available for Inspection 6.3.3.1.4 The written EAP shall be kept at the facility and available for emergency personnel/AHJ upon request. B

Training Documentation 6.3.3.1.5 Documentation from employees trained in current EAP shall be available upon request. B

Components 6.3.3.1.6 The EAP shall include at a minimum: A

1) A diagram of the facility;
2) A list of emergency telephone numbers;
3) The location of first aid kit and other rescue equipment (bag valve mask, AED if provided, backboard, etc.);
4) An emergency response plan for accidental chemical release.

Accidental Chemical Release Plan 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 cleanup.

Remediation Supplies 6.3.3.1.6.2 The availability of equipment and supplies for remediation procedures shall be verified by the operator at least weekly.

Facility Evacuation Plan 6.3.3.1.7 A written Facility Evacuation Plan shall be developed and maintained for the facility. A

Evacuation Plan Components 6.3.3.1.7.1 This plan shall include at a minimum:

1) Actions to be taken in cases of drowning, serious illness or injury, chemical handling accidents, weather emergencies, and other serious incidents; and
2) Defined roles and responsibilities for all staff.

Communication Plan 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

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At a minimum, this plan shall include:

1) Provision and use of readily accessible, appropriate communication devices such as telephones, call boxes, and mobile devices;
2) Signage;
3) Procedures to be followed during staffed and unstaffed time periods;
4) Acceptable alternative communication during loss of power; and
5) Training of all personnel.

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.

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.).

Contingency plans shall include training for employees, evacuation procedures, and determining when it is acceptable to re-open a facility for operation.

Lifeguard-based remote safety monitoring systems shall not replace the need for lifeguards.

Remote safety monitoring systems may be used to aid the operation but not as a substitute for staffing when critical areas such as blind spots in an AQUATIC VENUE or area of a slide cannot be viewed by lifeguard/slide operators.

Operator-based remote water quality monitoring systems shall not be a substitute for manual water quality testing of the AQUATIC VENUE.
monitoring systems are used, AQUATIC FACILITY staff shall be trained on their use and response.

**Employee Illness and Injury Policy**

**6.3.3.3**

Operators shall not permit employees who are ill with diarrhea in the water or in a lifeguard role.

**Open Wounds**

**6.3.3.2**

Operators shall only permit employees with open wounds in the water or in a lifeguard role if they have physician approval or wear a waterproof, occlusive bandage to cover the wound.

**Facility Management**

**6.4**

**6.4.1**

Operators

**6.4.1.1**

Operations Manual

**6.4.1.2**

System Check Program

**6.4.1.3**

Recordkeeping

**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 for 3 full years.

**Made Available**

**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.

**State and Company Policy**

**6.4.1.3.3**

Operation and maintenance records shall be retained according to the states statute of limitations and company policy.

**Chemical inventory log**

**6.4.1.3.4**

A chemical inventory log shall be maintained to provide a list of chemicals and approximate quantities on site.

**Patron-Related Management Aspects**

**6.4.2**

**6.4.2.1**

Bather Load

**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.
Maximum Bather Load 6.4.2.1.2 Such plans shall not exceed the maximum designed BATHER load.

Signage 6.4.2.2 Signage A

Venue Rules 6.4.2.2.1 The operator shall post and enforce the AQUATIC VENUE rules governing SAFETY and sanitation.

Conspicuous Place 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.

Lettering 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 Signage shall 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:

1) In case of an emergency dial 911
2) Hours of operation; AQUATIC FACILITY use prohibited at any other time (if facility is not a secured facility such as an apartment complex)
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 and no animals on the AQUATIC VENUE DECK (except service animals)
9) No Lifeguard on Duty: Children under 12 years must have adult supervision (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.”
<table>
<thead>
<tr>
<th>Keyword</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Emergency Signage</td>
<td>6.4.2.2.4.1</td>
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<td>Multi-Venue Facilities</td>
<td>6.4.2.2.4.2</td>
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<tr>
<td>Posted at Entrance</td>
<td>6.4.2.2.4.3</td>
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</tr>
<tr>
<td>Spa Venue Signage</td>
<td>6.4.2.2.4.3.1</td>
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<td>Movable Bottom Floor Signage</td>
<td>6.4.2.2.5</td>
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<tr>
<td>Spa Signs</td>
<td>6.4.2.2.6</td>
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**Emergency Signage**

6.4.2.2.4.1 Signage requirement #1: If emergency trained personnel are on site so that the response would be faster than calling 911 then this requirement may be amended to include on-site emergency staff contact information.

**Multi-Venue Facilities**

6.4.2.2.4.2 For multi-venue aquatic facilities, all signage items in MAHC 6.4.2.2.4, or text complying with the intent of the information, shall be posted in full view at the each entrance to the aquatic facility.

**Posted at Entrance**

6.4.2.2.4.3 For multi-venue aquatic facilities, MAHC 6.4.2.2.4 signage items numbers 3, 5, 6, 7, and 10, or text complying with the intent of the information, shall be posted at the entrance to each aquatic venue.

**Spa Venue Signage**

6.4.2.2.4.3.1 For multi-venue aquatic facilities, spa venue signage shall include MAHC 6.4.2.2.4 signage items numbers 3, 5, 6, 7, and 10 plus MAHC 6.4.2.2.6 signage requirements, or text complying with the intent of the information.

**Movable Bottom Floor Signage**

6.4.2.2.5 At a minimum, AQUATIC VENUES with moveable bottom floors shall have the following information, or text complying with the intent of the following information:

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 Signs**

6.4.2.2.6 At a minimum, spa VENUES shall have, in addition to the AQUATIC VENUE requirements, the following information, or text complying with the intent of the following information:

1) Maximum water temperature is 104°F (40°F).
2) Children under age 5 and people using alcohol, narcotics or other drugs that cause drowsiness shall not use spas.
3) Pregnant women and people with heart disease, high blood pressure or other health problems should not use spas without prior consultation with a physician.
4) Children under 12 years of age shall be supervised by an adult.
5) Use of the spa when alone is prohibited (if no lifeguards on site)

**Hygiene Facility Signage**

6.4.2.2.7 Signage shall be posted at the HYGIENE FACILITY exit used to access AQUATIC VENUES stating or containing information, or text complying with the intent of the following information:

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**

**6.6.1.1 General Safety Inspections**

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

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 functional condition;
8) Lighting that is provided for indoor and outdoor facilities is functioning properly; and,
9) Electrical devices shall be in good working condition and meet the requirements specified in the NEC and MAHC.

Aquatic Venues, Multi-Attraction Facilities, and Waterparks: 6.6.1.2

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

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 functional, safe condition;
8) Diving boards are non-slip and secure;
9) Moveable fulcrum is adjusted properly to control spring in the board as necessary;
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;
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<tr>
<th>Keyword</th>
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<tr>
<td>13) Drain covers are secured and undamaged;</td>
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<td>14) SVRS is functioning according to manufacturer’s guidelines;</td>
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<td>15) Skimmer baskets and covers are clean and in place;</td>
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<td>16) Water quality and clarity is MAHC compliant;</td>
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<td>17) Water level is at an appropriate level;</td>
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<td>18) Pumps retain the appropriate pressure;</td>
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<td>19) Play structures are secure (consider water velocity and reference manufacturers recommended levels);</td>
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<td>20) Verify required documentation and records are in place and signed by the appropriate personnel.</td>
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