2016 Model Aquatic Health Code

Code Language

PREFACE

CS267224A

1.0 Preface

Note: Section numbers with superscript "A" (e.g., 1.0[A]) denote a corresponding discussion in the* Annex to the Model Aquatic Health Code*.

1.1 Introduction

1.1.1[A] Rationale

In recent decades, public health practitioners have seen a dramatic increase in waterborne disease outbreaks associated with public disinfected AQUATIC FACILITIES *(e.g. swimming POOLS, water parks, etc.)*. As a result, public health investigations have revealed that many diseases can be prevented by proper maintenance and water treatment and by more modern disease prevention practices. Drowning and falling, diving, chemical use, and suction injuries continue to be major public health injuries associated with public AQUATIC FACILITIES, particularly for young children. In this context, the health and SAFETY at public AQUATIC FACILITIES is regulated by state and local jurisdictions since, in the United States, there is no federal regulatory authority responsible for these public AQUATIC FACILITIES. All public POOL CODES are developed, reviewed, and approved by state and/or local public health officials or legislatures. Consequently, there is no uniform national guidance informing the design, construction, operation, and maintenance of public swimming POOLS and other public disinfected AQUATIC FACILITIES. As a result, the CODE requirements for preventing and responding to recreational water illnesses *(RWIs)* and injuries can vary significantly among local and state agencies. State and local jurisdictions spend a great deal of time, personnel, and resources creating and updating their individual CODES on a periodic basic.

1.1.2 Need for Further Guidance

Based on illness tracking data, outbreak reporting, and stakeholder feedback, CDC believed further prevention-oriented planning and action were needed. CDC worked with the Council of State and Territorial Epidemiologists *(CSTE)* to get agreement on the need for a national workshop to develop guidance for preventing future RWI outbreaks. This CSTE position statement was passed in 2004 and CDC was tasked with organizing the national workshop, which was held in 2005. The 1st Edition of the MAHC was released in 2014.

1.1.3 Responsibility of User

This document does not address all SAFETY or public health concerns associated with its use. It is the responsibility of the user of this document to establish appropriate health and SAFETY practices and determine the applicability of regulatory limitations prior to each use.

1.1.4 Original Manufacturer Intent

In the absence of exceptions or further guidance, all fixtures and equipment shall be installed according to original manufacturer intent.

1.1.5 Local Jurisdiction

The MAHC refers to existing local CODES in the jurisdiction for specific needs. In the absence of existing local codes, the AUTHORITY HAVING JURISDICTION *(AHJ)* should specify an appropriate code reference.

1.2 Recreational Water-Associated Illness Outbreaks and Injuries

1.2.1[A] RWI Outbreaks

Large numbers of recreational water-related outbreaks are documented annually, which is a significant increase over the past several decades.

1.2.2[A] Significance of *Cryptosporidium*

Cryptosporidium causes a diarrheal disease spread from one person to another or, at AQUATIC VENUES, by ingestion of fecally-contaminated water. This pathogen is tolerant of CHLORINE and other halogen disinfectants. *Cryptosporidium* has emerged as the leading cause of POOL-associated outbreaks in the United States.

1.2.3[A] Drowning and Injuries

Drowning and falling, diving, POOL chemical use, and suction injuries continue to be major public health injuries associated with AQUATIC FACILITIES. Drowning is a leading cause of injury death for young children and a leading cause of unintentional injury death for people of all ages.

1.2.4[A] Pool Chemical-Related Injuries

POOL chemical-related injuries occur regularly and can be prevented if POOL chemicals are stored and used as recommended.

1.3 Model Aquatic Health Code

1.3.1[A] Background

All POOL CODES in the United States are reviewed and approved by state and/or local public health officials with no uniform national public health STANDARDS governing design, construction, operation, maintenance, policies, or management of public swimming POOLS and other public AQUATIC FACILITIES.

The effort to create the MAHC stems from a CDC-sponsored national workshop called "Recreational Water Illness Prevention at Disinfected Swimming Venues" that was convened on February 15-17, 2005, in Atlanta, Georgia. The workshop assembled persons from different disciplines working in state, local, and federal public health agencies, the aquatics sector, and academia to discuss ways to minimize the spread of RWIs at disinfected AQUATIC FACILITIES. The major recommendation from this workshop was that CDC lead a national partnership to create an open access model guidance document that helps local and state agencies incorporate science and BEST PRACTICES into their swimming POOL CODES and programs without having to "recreate the wheel"

each time they create or revise their POOL CODES. The attendees also recommended that this effort be all-encompassing so that it covered the spread of illness but also included drowning and injury prevention. Such an effort should increase the evidence base for AQUATIC FACILITY design, construction, operation, and maintenance while reducing the time, personnel, and resources needed to create and regularly update POOL CODES across the country.

Starting in 2007, CDC worked with the public health sector, the aquatics sector, and academic representatives from across the United States to create this guidance document. Although, the initial workshop was responding to the significant increases in infectious disease outbreaks at AQUATIC FACILITIES, the MAHC is a complete AQUATIC FACILITY guidance document with the goal of reducing the spread of infectious disease and occurrence of drowning, injuries, and chemical exposures at public AQUATIC FACILITIES. Based on stakeholder feedback and recommendations, CDC agreed that public health improvements would be aided by development of an open access, comprehensive, systematic, collaboratively developed guidance document based on science and BEST PRACTICES covering AQUATIC FACILITY design and construction, operation and maintenance, and policies and management to address existing, emerging, and future public health threats. The 1st Edition of the MAHC was released in 2014.

1.3.2 MAHC Vision and Mission

The MAHC vision is “Healthy and Safe Aquatic Experiences for Everyone”. The MAHC’s mission is to incorporate science and BEST PRACTICES into guidance on how state and local officials can transform a typical health department POOL program into a data-driven, knowledge-based, risk reduction effort to prevent disease and injuries and promote healthy recreational water experiences. The MAHC will provide local and state agencies with uniform guidelines and wording for the areas of design and construction, operation and maintenance, and policies and management of swimming POOLS, SPAS and other public disinfected AQUATIC FACILITIES.

1.3.3 Science and Best Practice

The availability of the MAHC should provide state and local agencies with the best available guidance for protecting public health using the latest science and BEST PRACTICES so they can use it to create or update their swimming POOL CODES.

1.3.4 Process

The MAHC development process created comprehensive consensus risk reduction guidance for AQUATIC FACILITIES based upon national interaction and discussion. The development plan encompassed design, construction, alteration, replacement, operation, and management of these facilities. The MAHC is driven by scientific data and BEST PRACTICES. It was developed by a process that included input from all sectors and levels of public health, the aquatics sector, academia, and the general public. It was open for two 60-day public comment periods during the process. It is national and comprehensive in scope and the guidance can be used to write or update POOL CODES across the U.S. The 1st Edition of the MAHC was released in 2014.

1.3.5 Open Access

The MAHC is an open access document that any interested individual, agency, or organization can freely copy, adapt, or fully incorporate MAHC wording into their AQUATIC FACILITY oversight documents. As a federal agency, CDC does not copyright this material.

1.3.6 Updating the MAHC

The MAHC will be updated on a continuing basis through an inclusive, transparent, all-stakeholder process. This was a recommendation from the original national workshop and is essential to ensure that the MAHC stays current with the latest science, industry advances, and public health findings. To support this recommendation, CDC has supported the 2013 creation of the Council for the Model Aquatic Health Code *(CMAHC; www.cmahc.org)*, a 501(c)(3) non-profit organization, to facilitate collecting, assessing, and relaying national input on needed MAHC revisions back to CDC for final consideration for acceptance. The CMAHC was created to manage the national partnership of MAHC participants and gather recommendations from this partnership on how to improve and continually update the MAHC. The first biennial update conference was held in 2015. The results of the CMAHC membership change requests and vote were delivered to CDC in January 2016 and have been incorporated into the MAHC to make the 2016 MAHC (2nd Edition).

1.3.7 Authority

Regulatory agencies like state and local governments have the authority to regulate AQUATIC FACILITIES in their jurisdiction.

1.3.8 CDC Role

The MAHC is hosted by the Centers for Disease Control and Prevention *(CDC)*, a federal agency whose mission is "To promote health and quality of life by preventing and controlling disease, injury, and disability." Furthermore, CDC has been involved in developing swimming POOL-related guidance since the 1950s and officially tracking waterborne disease outbreaks associated with AQUATIC FACILITY use since 1978. CDC operates the Healthy Swimming Program to reduce illness and injury associated with recreational water use and has overseen the Healthy Swimming website since 2001 *(www.cdc.gov/healthyswimming).* CDC has also established a specific MAHC website *(www.cdc.gov/mahc)* to house the MAHC and all materials to assist MAHC users.

1.3.8.1 Public Health Role

CDC is "the primary Federal agency for conducting and supporting public health activities in the United States"; however, CDC is not a regulatory agency.

1.3.8.2 Model Guidance

The MAHC is intended to be open access guidance that state and local public health agencies can use to write or update their POOL CODES in part or in full as fits their jurisdiction's needs. The CDC adopted this project because no other U.S. federal agency has commission over public disinfected AQUATIC FACILITIES. Considering the CDC's

mission and historical interest in aquatics, this organization was the best qualified to lead a national consortia to create such a document.

1.4 Public Health and Consumer Expectations

1.4.1 Aquatics Sector & Government Responsibility

Both the aquatics sector and the government share the responsibility of offering AQUATIC FACILITIES that provide consumers and aquatics workers with safe and healthy recreational water experiences and job sites and that do not become sources for the spread of infectious diseases, outbreaks, or the cause of injuries. This shared responsibility extends to working to meet consumer expectations that AQUATIC FACILITIES are properly designed, constructed, operated, and maintained.

1.4.2 Swimmer Responsibility

The PATRON or BATHER shares a responsibility in maintaining a healthy swimming environment by practicing the CDC-recommended healthy swimming behaviors to improve hygiene and reduce the spread of disease. Consumers and BATHERS also share responsibility for using AQUATIC FACILITIES in a healthy and safe manner to reduce the incidence of injuries.

1.5 Advantages of Uniform Guidance

1.5.1[A] Sector Agreement

The aquatics sector and public health officials recognize the value in uniform, consensus guidance created by multi-sector discussion and agreement – both for getting the best possible information and gaining sector acceptance. Since most public AQUATIC FACILITIES are already regulated, the MAHC is intended to be guidance to assist, strengthen, and streamline resource use by state and local CODE officials or legislatures that already regulate AQUATIC FACILITIES but need to regularly update and improve their AQUATIC FACILITY oversight and regulation. Uniform, consensus guidance using the latest science and BEST PRACTICES helps all public sectors, including businesses and consumers, resulting in the best product and experiences.

In addition, the MAHC's combination of performance-based and prescriptive recommendations gives AQUATIC FACILITIES freedom to use innovative approaches to achieve acceptable results. However, AQUATIC FACILITIES must ensure that these recommendations are still being met, whatever the approach may be, although innovation should be encouraged to achieve outlined performance-based requirements.

1.5.2 MAHC Provisions

The MAHC provides guidance on AQUATIC FACILITY design STANDARDS & construction, operation & maintenance, and policies & management that can be uniformly adopted for the aquatics sector.

The MAHC:

- Is the collective result of the efforts and recommendations of many individuals, public health agencies, and organizations within the aquatics sector,
- Embraces the concept that safe and healthy recreational water experiences by the public are directly affected by how we collectively design, construct, operate, and maintain our AQUATIC FACILITIES, and
- Is updated biennially based on input from CMAHC members.

1.5.3 Aquatic Facility Requirements

Model performance-based recommendations essentially define public aquatic health and SAFETY expectations, usually in terms of how dangerous a pathogen or injury is to the public. By using a combination of performance-based recommendations and prescriptive measures, AQUATIC FACILITIES are free to use innovative approaches to provide healthy and safe AQUATIC FACILITIES whereas traditional evaluations mandate how AQUATIC FACILITIES achieve acceptable results. However, to show compliance with the model performance-based recommendation, the AQUATIC FACILITY must demonstrate that control measures are in place to ensure that the recommendations are being met. The underlying theme of the MAHC is that it should be based on the latest science where possible, BEST PRACTICES, and that change will be gradual so all parties can prepare for upcoming changes; “Evolution, not revolution.”

1.6 Modifications and Improvements in the 2016 MAHC

1.6.1 Structural Changes

(Note: CR refers to the CMAHC Change Request number that proposed the change. Individual CMAHC change requests from the 2015 Biennial CMAHC Conference can be viewed at https://cmahc.org/2015_change_requests.php).

1.6.1.1 Color Scheme

The Code and Annex covers are completely different colors so they can be readily differentiated.

1.6.1.2 Layout

1.6.1.2.1 Page Headers

All pages have a header with edition number *(MAHC 2016)* for easy reference.

1.6.1.2.2 Individual Sections

Individual sections have section number and title to avoid confusion.

1.6.1.2.3 Code and Annex Linkage

All code sections with accompanying annex wording have a superscript “A” next to the MAHC section number *(e.g. 1.0^{A})* to make it easier to know when to refer to the annex for further information.

1.6.1.2.4 Glossary

1.6.1.2.4.1 Separate Glossaries for Code and Annex

The glossary sections for code and annex have been separated so it is clear which acronyms, initialisms, and terms are code and annex specific.

1.6.1.2.4.2 New List of Codes Specifically Referenced

Added a new section (MAHC 3.3) in the code and annex to list what codes, standards and laws are specifically referenced in the code section vs. citation in the annex.

1.6.1.2.5 Resources

MAHC Annex 7.1 has been edited to include only guidelines cited. All cited codes, standards, and laws have been moved to the new section MAHC 3.3.

1.6.1.3 Code Changes and Improvements

1.6.1.3.1 Throughout Text

Extensive small edits have been made to clarify language.

1.6.1.3.2 Specific Sections

- 4.1.2.3.11: Lifeguard zones of patron surveillance now included in aquatic facility plan technical specifications.
- 4.2.1.8, & 4.5.16.1, & 4.8.1.4.2, & 4.10.3.1: Slip resistance is now testable and must meet requirements of new ANSI standard.
- 4.5.5.7: Stair handrail dimensions altered based on child anthropometry *(size)* data.
- 4.6.4.4: Carbon monoxide detectors required.
- 4.7.3.2.5.1.2, & 4.7.3.2.5.1.3, & 4.7.3.2.5.1.4: Adds wording to delineate how feeder tubing delivering chemicals will be protected from leaks to prevent injuries in staff or patrons.
- 4.8.6.3.7: The height for self-latching mechanisms on enclosures in unguarded aquatic venues has been raised to 4.5 feet to reduce the chance of young children entering without an adult.
- 5.6.1.1.3.1: Underwater lighting branch circuits now require GFCI as per NEC if operating at higher voltages.
- 5.7.3.1.2.3: Sets maximum bromine level to 8ppm for all aquatic venues.
- 6.2.1.2.6: Requires that lifeguard instructors be taught by a certified lifeguard instructor trainer.
- 6.2.2.3.1: Lifeguard training course requirements must now include specifics for e-learning courses.
- 6.2.1.3.7.2: Lifeguard challenge exams must now have a certified lifeguard instructor present.
- 6.5.3.2.1: Updates fecal incident response for aquatic venues using chlorine stabilizers.

1.7 MAHC Adoption at State or Local Level

1.7.1[A] MAHC Adoption at State or Local Level

The MAHC is provided as guidance for voluntary use by governing bodies at all levels to regulate public AQUATIC FACILITIES. At the state and local levels, the MAHC may be used in part or in whole to:

1) Enact into statute as an act of the state legislative body; or
2) Promulgate as a regulation, rule or CODE; or
3) Adopt as an ordinance.

CDC is committed to offering, at a minimum, assistance to states and localities in interpreting and implementing the MAHC. CDC welcomes suggestions for how it could best assist localities in using this guidance in the future. CDC also offers a MAHC toolkit *(including sample forms and checklists)* and is available to give operational guidance to public health POOL programs when needed. CDC is committed to expanding its support of the MAHC and ensuring timely updates and improvements.

1.7.2 Council for the Model Aquatic Health Code

Other assistance to localities will also be available. The Council for the Model Aquatic Health Code (CMAHC*; www.cmahc.org)*, an independent, nonprofit 501(c)(3) organization, was created with CDC support in 2013 to support and improve public health by promoting healthy and safe aquatic experiences for everyone. The CMAHC's role is to serve as a national clearinghouse for input and advice on needed improvements to CDC's MAHC. The CMAHC will fulfill this role by:

1) Collecting, assessing, and relaying national input on needed MAHC improvements back to CDC for final consideration for acceptance,
2) Advocating for improved health and SAFETY at swimming facilities,
3) Providing consultation and assistance to health departments, boards of health, legislatures, and other partners on MAHC uses, benefits, and implementation,
4) Providing consultation and assistance to the aquatics industry on uses, interpretation, and benefits of the MAHC, and
5) Soliciting, coordinating, and prioritizing MAHC research needs.

CDC and the CMAHC will work together closely to continue to incorporate national input into the MAHC and provide optimal guidance and assistance to public health officials and the aquatics sector.

1.8 The MAHC Revision Process

1.8.1[A] MAHC Revisions

Throughout the creation of the MAHC, the CDC accepted concerns and recommendations for modification of the MAHC from any individual or organization through two 60-day public comment periods via the email address MAHC@cdc.gov.

CDC realizes that the MAHC should be an evolving document that is kept up to date with the latest science, industry advances, and public health findings. As the MAHC is used and recommendations are put into practice, MAHC revisions will need to be made. As the future brings new technologies and new aquatic health issues, the CMAHC, with CDC participation, has instituted a biennial change request solicitation process for collecting national input that welcomes all stakeholders to participate in making recommendations to improve the MAHC so it remains comprehensive, easy to understand, and as technically sound as possible. After CMAHC member voting, accepted recommendations will then be sent to CDC and weighed by CDC for final incorporation into the next edition of the MAHC.