

Model Aquatic Health Code Draft Module

**Preface / User Guide / Glossary Module CODE Sections
Modified after the First 60-day Review
Closed for Public Comment on 12/09/2008**

Informational Copy: NOT Currently Open for Public Comment

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 also 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 Preface / User Guide / Glossary Module Abstract

The Preface/ User Guide / Glossary Module outlines the rationale, history, and impetus for creation of the MAHC and its sponsorship by CDC. Infectious disease outbreak and injury data, and the lack of a national model support creation of the MAHC. The module explains the operating premises that served as the foundation for creation of the MAHC and outlines long term plans for updating it to ensure it remains current. This is followed by a User Guide that explains how the MAHC should be read, interpreted, and implemented. A partial Glossary is included that defines specific terms. When all MAHC modules are combined into a single MAHC document, the MAHC will include a complete Glossary that includes all terms defined across all modules within the MAHC. The MAHC will:

- 1) Ensure the best available standards and practices for protecting public health are available.
- 2) Incorporate data and best-practices based practices.
- 3) Updated on a regular basis with wide input.
- 4) Serve as a model that can then be used by state and local public health agencies to adopt in part or in full as regulations for their jurisdiction.

The Preface / User Guide / Glossary Code Module shows a Table of Contents giving the context of the Preface / User Guide / Glossary Design, Construction, Operation and Maintenance in the overall Model Aquatic Health Code's Strawman Outline (<http://www.cdc.gov/healthywater/pdf/swimming/pools/mahc/structure-content/mahc-strawman.pdf>).

MAHC Strawman

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Acronyms in this Module:

ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control and Prevention
CPSC	Consumer Product Safety Commission
MAHC	Model Aquatic Health Code
RWI	Recreational Water Illness
WBDO	Waterborne Disease Outbreaks

Glossary Terms in this Module:

“Aquatic Facility” means a physical place that contains one or more aquatic venues and support infrastructure under a single management structure.

“Aquatic Feature” means an individual recreational component within an aquatic venue. Examples include mushrooms, slides, buckets, and spray guns/nozzles.

“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 pool, rivers, spas (including spa pools and hot tubs), interactive fountains, therapeutic pools, and spray pads.

“Authority Having Jurisdiction” (AHJ) means an agency, organization, office, or individual responsible for enforcing the requirements of a code or standard, and/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, which include staff members, can be exposed to contaminated water as well as potentially contaminate the water.

“Fecal-oral transmission” means a route of spreading disease in which pathogens in feces from people or animals contaminates food, water, or objects which can then be ingested, touched, or swallowed so the contaminating feces finds its way into the mouth of another person and causes disease.

“Free Chlorine Residual” means the available reservoir of chlorine in water (found as an aqueous mixture of hypochlorous acid and hypochlorite anion) that has not combined with other constituents; therefore, it is able to serve as an effective disinfectant (also referred to as free available chlorine or residual chlorine). It is measured as Free Chlorine (FC) in standardized tests and is the chlorine capacity that can be quickly converted to become an effective disinfectant. Measuring the free chlorine level is a common water quality test.

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

“Diaper-aged children” means a child less than 5 years of age.

“Disinfection” means a treatment that kills microorganisms (e.g., bacteria, viruses, and parasites); in water treatment, a chemical (commonly chlorine, chloramine, or ozone) or physical process (e.g., ultraviolet radiation) can be used.

“Generally Accepted Practice” means a technique or methodology that is widely used but may or may not be the “best practice.”

“Increased-risk Aquatic Venue” means a venue which due to its intrinsic characteristics including intended users (e.g., diaper-aged children, hospital patients), has a greater likelihood of contamination that could affect the health and safety of the patrons of that aquatic venue. Examples of high-risk aquatic venues include “kiddie” wading pools or splash pads and therapy pools.

“Performance Standards” means “an engineering approach to design elements of a facility based on agreed upon performance goals and objectives, engineering analysis and quantitative assessment of alternatives against the design goals and objectives using accepted engineering tools, methodologies, and performance criteria.

“Pool” means a subset of aquatic venues designed to have captured water for total or partial bather immersion.

“Prescriptive Standards” means an approach, which identifies specific requirements to be used in the design of a facility.

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

“Uniform Standards” means multiple standards with a similar scope and intent

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“Waterborne Disease” means disease spread via swallowing, breathing in mists or aerosols of, or having contact with contaminated water. This can include infectious or chemical causes of disease including chemicals that evaporate from the water and cause health problems. Waterborne disease can include a wide variety of infections, including gastrointestinal, skin, ear, respiratory, eye, neurologic and wound infections.

***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 health and safety practices and determine the applicability of regulatory limitations prior to each use.*

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Model Aquatic Health Code
Preface / User Guide / Glossary Module Code
1.0 Preface

Key word	Section	Code	Grade
	1.0	Preface	
	1.1	Introduction	
<i>Introduction</i>	1.1.1	There has been a dramatic increase in WATERBORNE DISEASE outbreaks (WBDO) associated with AQUATIC FACILITIES in recent years. 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 aquatic venues, particularly for young children.	
<i>MAHC Need</i>	1.1.2	The nation needed a comprehensive, science-based, and systematic CODE ON AQUATIC FACILITY design, construction, operation and maintenance to address existing and emerging public health threats.	
<i>Mission Statement</i>	1.1.3	The intent for the Model Aquatic Health Code (MAHC) is that it is user-friendly, knowledge-based, and scientifically supported in an effort to reduce risk and promote healthy recreational water experiences. The objective is to transform varied AQUATIC FACILITY regulations used by public health programs into a uniform model national CODE to ensure the health and safety of the swimming public.	
<i>Responsibility of User</i>	1.1.4	This document does not address all safety or public health 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.	
<i>Original Manufacturer Intent</i>	1.1.5	In the absence of exceptions or further guidance, all fixtures shall be installed according to original	

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		manufacturer intent.	
<i>Local Jurisdiction</i>	1.1.6	The MAHC refers to existing local building codes in the jurisdiction for specific needs. In the absence of existing local codes, the jurisdiction should specify an appropriate code reference.	
	1.2	Recreational Water-Associated Illness (RWI) Outbreaks	
<i>Statistics for RWI Outbreaks</i>	1.2.1	Over 2007-2008, a total of 134 recreational water WBDOs affecting 13,966 people were reported to the CDC. After investigation, the CDC documented that 116 (86.6%) of these outbreaks and 96.5% of the cases were associated with disinfected aquatic facilities.	
<i>Significance of Cryptosporidium</i>	1.2.2	Fifty-eight of 116 (50%) treated recreational water-associated outbreaks reported in 2007-2008 were caused by <i>CRYPTOSPORIDIUM</i> , a FECAL-ORALLY transmitted disease that is tolerant of CHLORINE and other halogen disinfectants.	
<i>Drowning and Injuries</i>	1.2.3	Drowning and falling, diving, chemical use, and suction injuries continue to be major public health injuries associated with aquatic venues. Drowning is a leading cause of injury death for young children ages 1 to 4, and the fifth leading cause of unintentional injury death for people of all ages.	
<i>Pool Chemical-Related Injuries</i>	1.2.4	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 (MAHC)	
<i>Background</i>	1.3.1	All AQUATIC FACILITY 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, and maintenance of swimming POOLS and other AQUATIC FACILITIES.	
<i>Best Available</i>	1.3.2	The CODE requirements for preventing and responding to recreational water illnesses can vary significantly among local and state agencies. A	

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		model national CODE would ensure that the best available STANDARDS and practices for protecting public health are available for adoption by state and local agencies.	
Process	1.3.3	The MAHC development process created a comprehensive risk reduction plan for AQUATIC FACILITIES based upon national consensus. This development plan encompassed design, construction, alteration, replacement, operation, management, and regulatory oversight of these facilities. The CODE is data and best-practices based. It was developed by a process that included input from all sectors and levels of public health, the aquatic industry, and the general public. It was open to public comment at two different times during the process. It is national in scope and can be implemented across the U.S.	
Update Plan	1.3.4	The CODE will be updated on a continuing basis through an inclusive, transparent, all-stakeholder process.	
Authority	1.3.5	Regulatory agencies like state and local governments have the authority to regulate AQUATIC FACILITIES in their jurisdiction.	
CDC Role	1.3.6	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."	
Public Health	1.3.6.1	CDC is "the primary Federal agency for conducting and supporting public health activities in the United States"; however, they are not a regulatory agency.	
Model Code	1.3.6.2	The MAHC is intended to be a model aquatic CODE that state and local public health agencies can adopt in part or in full as CODE regulations for their jurisdiction. The CDC adopted this project because no other U.S. federal agency had commission over public aquatic facilities. Considering the CDC's mission, this organization was the best qualified to create such a document.	

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	1.4	Public Health and Consumer Expectations	
<i>Industry & Government Responsibility</i>	1.4.1	Both the aquatics industry and the government share the responsibility of ensuring that AQUATIC FACILITIES provide consumers with safe and healthy recreational water experiences and do not become sources for transmission of COMMUNICABLE disease or outbreaks or the cause of injuries. This shared responsibility extends to ensuring that consumer expectations are met and that AQUATIC FACILITIES are properly designed, constructed, operated, and maintained.	
<i>Swimmer Responsibility</i>	1.4.2	The consumer or BATHER shares a responsibility in maintaining a healthy swimming environment by practicing the CDC-recommended healthy swimming behaviors to improve hygiene and reduce disease transmission. Consumers and BATHERS are also share responsibility for using aquatic facilities in a safe manner to reduce the incidence of injuries.	
	1.5	Advantages of Uniform Standards	
<i>Advantages of Uniform Standards</i>	1.5.1	Aquatics Industry and public health officials recognize the value in UNIFORM STANDARDS created by consensus processes – both by getting the best possible information and gaining industry acceptance. UNIFORM STANDARDS help all public sectors – including businesses and consumers – have the best product and experiences. In addition, the MAHC’s combination of PERFORMANCE STANDARDS and PRESCRIPTIVE recommendations gives AQUATIC FACILITIES freedom to use innovative approaches to achieve acceptable results. However, facilities must ensure that STANDARDS are still being met, however the approach may be.	
<i>Performance vs. Prescriptive Standards</i>	1.5.2	Reserved for Future Addition	
	1.6	Modifications and Improvements in this Edition	

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	1.6.1	(reserved)	
	1.7	Code Adoption at State or Local Level	
<i>Code Adoption at State or Local Level</i>	1.7.1	The MAHC is provided for use by governing bodies at all levels to regulate AQUATIC FACILITY STANDARDS. At the state and local levels the MAHC may be: <ol style="list-style-type: none"> 1) Enacted into statute as an act of the state legislative body; 2) Promulgated as a regulation; or 3) Adopted as an ordinance. 	
	1.8	The Code Revision Process	
<i>Model Aquatic Health Code Revisions</i>	1.8.1	The MAHC Steering and Technical Committees realize that this code is an evolving document. As the codes and recommendations are put into practice, code revisions will probably need to be made. As the future will bring new technologies and new aquatic health issues, the MAHC governing body will institute a revision process that welcomes all stakeholders to participate to make this document as comprehensive, easy to understand, and technically sound as possible.	
<i>Submission of MAHC Change Suggestions</i>	1.8.2	CDC will continue to accept concerns and recommendations for modification of the CODE from any individual or organization via the email address MAHC@cdc.gov .	
	1.9	Acknowledgements	
<i>Acknowledgements</i>	1.9.1	Many individuals devoted considerable time and effort in addressing concerns and developing recommendations that are now reflected in the MAHC.	
<i>Diversity</i>	1.9.1.1	These individuals represent a wide diversity of regulators, educators, industry leaders, and consumer representatives acting through their agencies, companies, professional groups, or trade organizations.	
<i>Dedication</i>	1.9.1.2	It is only through the dedicated efforts and contributions of experienced professionals that a	

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<i>Development</i>	1.9.1.3	scientifically sound, well focused, and up- to-date model CODE is possible.	
		CDC acknowledges with gratitude the substantial assistance of those who contributed to public health and aquatic safety in the development of the Model Aquatic Health Code.	

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Model Aquatic Health Code

Preface / User Guide / Glossary Module

2.0 User Guide

Key word	Section	Code	Grade										
	2.0	User Guide											
	2.1	Overview											
<i>New Users</i>	2.1.1	A new user will find it helpful to review the Table of Contents in order to quickly gain an understanding of the scope and sequence of subjects included in the CODE.											
<i>Topic Presentations</i>	2.1.2	CODE provisions address essentially three areas: Design & Construction (Chapter 4), Operation & Maintenance (Chapter 5), Policies & Management (Chapter 6). In addition, an overarching explanation of the MAHC as a risk reduction plan is provided in the Annex.											
	2.2	MAHC Structure and Format											
<i>Numbering System</i>	2.2.1	<p>The CODE follows a numeric outline format. The structural numbering system of the document is as follows:</p> <table style="margin-left: 40px;"> <tr> <td>Chapter</td> <td>1.0</td> </tr> <tr> <td>Part</td> <td>1.1</td> </tr> <tr> <td>Subpart</td> <td>1.1.1</td> </tr> <tr> <td>Section</td> <td>1.1.1.1</td> </tr> <tr> <td>Paragraph</td> <td>1.1.1.1.1</td> </tr> </table> <p>Recommended CODE requirement wording is shown to the right side of the numbering system. These requirements usually appear in sentence or paragraph format.</p>	Chapter	1.0	Part	1.1	Subpart	1.1.1	Section	1.1.1.1	Paragraph	1.1.1.1.1	
Chapter	1.0												
Part	1.1												
Subpart	1.1.1												
Section	1.1.1.1												
Paragraph	1.1.1.1.1												
<i>Left Column Text</i>	2.2.2	On the left portion of each page is a keyword or phrase summary showing the information contained in the corresponding CODE wording.											
<i>Critical Items</i>	2.2.3	Critical items have their number in red font and have an asterisk next to their number.											
<i>Italicized Words</i>	2.2.4	Italicized words indicate alternatives to comply with the CODE.											

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Illustrations	2.2.5	Appropriate charts, diagrams, and other illustrative material found in the Chapters will also appear in the Annex.	
Consistency Between Chapters 4.0 and 5.0	2.2.6	Each Part or Sub-part is repeated throughout CODE Chapters 4.0 (Design Standards & Construction) and 5.0 (Operation & Maintenance). For example, for DISINFECTION, the design STANDARDS and construction aspects are addressed in Subpart 4.7.3 and the operation and maintenance aspects are addressed in Subpart 5.7.3. If a topic is not applicable then that section is marked with a N/A (e.g., the size or width of the decking is not really applicable for Operation & Maintenance versus Design Standards & Construction). This is designed to allow CODE users to see how a topic of interest applies under both chapter headings.	
Conventions	2.2.7	The following conventions are used in the Model Aquatic Health Code. "Shall" means the act is imperative, i.e., "shall" constitutes a command. "May not" means absolute prohibition. "May" is permissive and means the act is allowed. The term "means" is followed by a declared fact.	
Definitions	2.2.8	Defined words and terms are in "SMALL CAPS" in the text of the CODE chapters to alert the reader that there is a specific meaning assigned to those terms and that the meaning of a provision is to be interpreted in the defined context. A concerted effort was also made to place in "SMALL CAPS" all forms and combinations of those defined words and terms that were intended to carry the weight of the definition.	
	2.3	MAHC Grading System	
Purpose	2.3.1	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.	
MAHC Grading System	2.3.2	The CODE grading system is as follows: 1) Grade A: Practice supported by science/research/data, 2) Grade B: GENERALLY ACCEPTED PRACTICE not	

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		supported by science/research/data, and	
		3) 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.

2.4 Annexes

<i>Rationale</i>	2.4.1	<p>The annex is provided to:</p> <ol style="list-style-type: none"> 1) Give further explanations of why certain recommendations are made; 2) Discuss rationale for making the CODE content decisions; 3) Provide a discussion of the scientific basis for selecting certain criteria, as well as discuss why other scientific data may not have been selected, e.g. due to data inconsistencies; 4) State areas where additional research may be needed; 5) Discuss and explain terminology used; and 6) Provide additional material that may not have been appropriately placed in the main body of suggested recommendations. This would include summaries of scientific studies, charts, graphs, or other illustrative materials.
<i>Content</i>	2.4.2	<p>The annexes located at the back of this document are meant to provide additional help to those responsible for using the CODE. Statements in the annex are intended to be supplements and additional explanations. They are not meant to be interpreted as CODE nor are they enforceable as CODE.</p>
<i>Bibliography</i>	2.4.3	<p>The Annex includes a list of codes referenced and a bibliography of the reference materials and scientific studies that form the basis for MAHC recommendations.</p>