



Mr. Sackett has worked for the New York State Department of Health for 36 years. Since 1987 he has been involved in the management of the statewide swimming pool and bathing beach regulatory program including the coordination of investigations of illnesses associated with recreational water and drownings at regulated swimming pools and beaches throughout the State and for the analysis of the data from these epidemiological investigations.

Mr. Sackett is the Director of CDC's project to develop a National Model Aquatic Health Code.

He is a member for the Board of Directors for the National Swimming Pool Foundation, served as a member of the National Swimming Pool Foundation Technical Advisory Committee for the Certified Public Pool Inspector Training Program and as a member of the American Red Cross Technical Advisory Team for the Lifeguard Management Program (2002).

Abstract

The Model Aquatic Health Code (MAHC) effort began in 2007. The goal is to develop a Model Aquatic Health Code that is user-friendly, knowledge-based, and scientifically supported in an effort to reduce risk and promote healthy recreational water experiences. The objective of the MAHC is to transform varied swimming pool regulations used by health departments into a uniform model national code to ensure the health and safety of the swimming public.

There is no federal authority for disinfected recreational venues. As a result, the MAHC will serve as a model and guide for local and state agencies to update or implement a pool code in their jurisdiction.

This presentation will provide a brief overview of the MAHC process and a status update of progress to date. It will also include a discussion of key concepts in the modules and elements that represent forward thinking for patron and staff health and safety at aquatic venues.


Model Aquatic Health Code Update

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NCEH / NCEZID
Model Aquatic Health Code



MAHC Genesis and Beginnings

Impetus for MAHC

- CDC sponsored workshop
 - “Recreational Water Illness Prevention at Disinfected Swimming Venues”
 - February 15-17, 2005 in Atlanta, Georgia
- Recommended a need for:
 - Data-driven, knowledge-based, risk reduction, public health effort to prevent disease and injuries
 - National model code that would allow health jurisdictions to pull needed information for creating local codes
 - Regular updating of model code based on new data
 - Open access to information in model code



MAHC Scope



- All areas of public health concern
 - Public venues
 - Water, air, facility exposures that impact bathers
 - Leave other areas to building codes, etc.
- Venue types
 - Man-made water venues
 - Health care-based pools
 - Therapy pools

MAHC Vision and Objective



- A MAHC that is user-friendly, knowledge-based, and scientifically supported in an effort to reduce risk and promote healthy recreational water experiences.
- The MAHC will transform varied swimming pool regulations used by health departments into a uniform set of state and local codes that ensure the health and safety of the swimming public.




MAHC Plan




- Data or best practices driven
 - Avoid prescription when possible
- Modular
 - Easier to complete if modules are updated rather than entire code
- Current and updated
 - Will be modeled after the Conference for Food Protection where a clear process is put in place to revise on a biennial basis based on new data
- Free and accessible for all
 - Web accessible

MAHC Outcomes




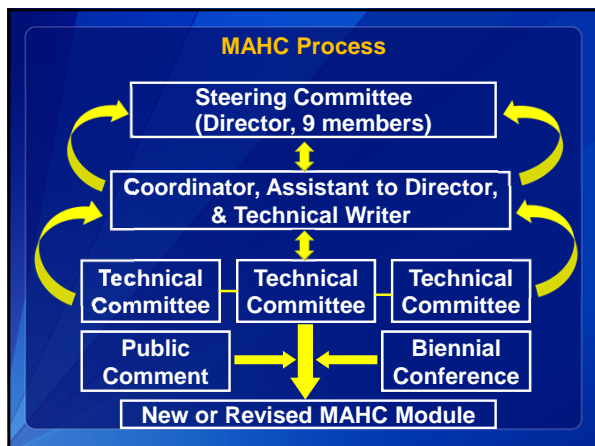
- Improved operations
 - Adoption of minimum standards throughout the U.S. (as with national food safety and building model codes)
 - Systems-based approaches to facility design, maintenance, and operation
- Improved pool programs
 - Improved surveillance systems
 - Improved data collection
 - Data-based decision making

MAHC Outcomes



- Research agenda
 - Need and discussion may drive availability of funding
- Long-term outcome
 - Reductions in RWIs





Steering Committee

- Director: Douglas Sackett, New York State Dept. of Health
- Michael Beach, Centers for Disease Control & Prevention
- Chip Cleary, International Association of Amusement Parks and Attractions
- Tracynda Davis, National Swimming Pool Foundation, representing NEHA
- Jim Dunn, Aquatic Development Group
- John Linn, SeaWorld Parks & Entertainment
- Colleen Maitoza, County of Sacramento Environmental Management Department, California
- Chuck Neuman, Water Technology Inc.
- Charles Otto, Centers for Disease Control & Prevention
- Bob Vincent, Florida Dept. of Health

Technical Committees

- | | |
|---|---|
| <ul style="list-style-type: none"> • Contamination Burden <ul style="list-style-type: none"> – Chairperson: Ellen Meyer • Disinfection & Water Quality <ul style="list-style-type: none"> – Chairperson: Jim Dingman • Facility Design & Construction <ul style="list-style-type: none"> – Chairperson: Carl Nylander • Facility Maintenance & Operation <ul style="list-style-type: none"> – Chairperson: Michael Beatty • Hygiene Facilities <ul style="list-style-type: none"> – Chairperson: Ralph Cordell • Lifeguarding/Bather Supervision <ul style="list-style-type: none"> – Chairperson: M. Kathryn Scott • Monitoring & Testing <ul style="list-style-type: none"> – Chairperson: Sung Choe | <ul style="list-style-type: none"> • Operator Training <ul style="list-style-type: none"> – Chairperson: Dennis Berkshire • Recirculation Systems & Filtration <ul style="list-style-type: none"> – Chairperson: James Amburgey • Regulatory Program Administration <ul style="list-style-type: none"> – Chairperson: Frank Guido • Risk Management/Safety <ul style="list-style-type: none"> – Chairperson: Amy Duck • Ventilation & Air Quality <ul style="list-style-type: none"> – Chairperson: Franceen Gonzales • Forming 13th Committee: Implementation |
|---|---|

Process and Status

- 12 modules in various degrees of SC review
- Post modules as ready for 60-day public comment
 - www.cdc.gov/healthywater/swimming/pools/mahc/structure-content
- Revise modules based on public comments and post for viewing (not for public comment)
- After all modules are revised following public comment
 - Blend all 12 modules into complete MAHC
 - Post for another 60-day comment period to allow reviews to occur in the context of all other modules
 - Revise based on public comments
 - Post and complete MAHC
- Revise MAHC through new process like food code

MAHC: Status of Module Development

Modules Released for Public Comment:

- Operator Training
 - Public comment addressed; module finalized.
- Ventilation & Air Quality
 - Public comment received; comments being assessed.
- Risk Management/Safety
 - Public comment period closes November 18, 2011.

Modules to be Released Imminently:

- Facility Maintenance & Operation
- Hygiene Facilities
- Regulatory Program Administration

MAHC: Status of Module Development

Modules Undergoing Final Discussions between Steering Committee and Technical Committees:

- Disinfection & Water Quality
- Lifeguarding/Bather Supervision
- Facility Design & Construction
- Contamination Burden

Modules Undergoing Final Development by Technical Committees:

- Recirculation Systems & Filtration
- Monitoring & Testing

Operator Training Module Key Elements

- Increased pool code violations have been linked to the lack pool operator training.
- These violations may also be linked to an increased potential for health effects if a facility is not operated and maintained appropriately.
- The Operator Training Module is a first step towards assuring adequate training for all personnel who operate aquatic facilities.

Operator Training Module Key Elements

- The Operator Training Module contains requirements for:
 1. Training course elements to be included in curricula.
 2. Instructor qualifications.
 3. Certificate validity to be for 5 years maximum.
 4. The Regulatory Program Administration Module will require trained operators for all aquatic facilities.

Ventilation & Air Quality Module Key Elements

- Health issues related to indoor pool use and associated poor water and air quality are increasingly being documented.
- The Ventilation & Air Quality Module is a first step towards improving air quality at indoor aquatic facilities and reducing associated health effects.

Ventilation & Air Quality Module Key Elements

- The Ventilation & Air Quality Module contains requirements for new or modified construction that include:
 1. Properly designed air distribution system.
 2. Increased make-up air required in addition to that required in the ASHRAE 62 standard for indoor pools.
 3. Determination of the extra make-up air needed based on the indoor venue water use type (e.g., flat water, agitated water, or hot water) and venue or deck patron density (square feet/person).

Ventilation & Air Quality Module Key Elements

- The Ventilation & Air Quality Module contains requirements for new or modified construction that include (*continued*):
 4. Inclusion in calculations of additional make-up air from surge tanks or gutters that introduce fresh air.
 5. Development and implementation of plans to reduce combined chlorine compounds in indoor aquatic facilities and inform facility patrons of their impact on building air quality.

Ventilation & Air Quality Module Key Elements

- The Ventilation & Air Quality Module contains requirements for new or modified construction that include (*continued*):
 6. Indoor aquatic facility ventilation system design requirements for temperature and humidity levels:
 - System capable of maintaining the relative humidity average at less than 65% in a 24 hour period when the building is occupied.
 - System capable of maintaining the facility air temperature at no more than 8° above or 2° below the average aquatic venue water temperature, without including aquatic venues that exceed 90°F in design calculation.

Risk Management/Safety Module Key Elements

- 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.

Risk Management/Safety Module Key Elements

- 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.

Risk Management/Safety Module Key Elements

- The Risk Management/Safety Module contains new guidelines covering (*continued*):
 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.

Facility Maintenance & Operation Module Key Elements

- Aquatic facility operation and maintenance is a critical component of maintaining health and safety.
- Past outbreaks have commonly found operation and maintenance lapses to be critical contributors to disease outbreaks and injuries.

Facility Maintenance & Operation Module Key Elements

- The Facility Maintenance & Operation Module lays the foundation for operational improvement by containing requirements for:
 1. Closure and reopening guidance for long and short term closures.
 2. Comprehensive plans for preventive maintenance, equipment inventorying, and development of an operations manual to be maintained at the facility.

Facility Maintenance & Operation Module Key Elements

- The Facility Maintenance & Operation Module lays the foundation for operational improvement by containing requirements for (*continued*):
 3. Reducing and mitigating excessive glare and reflection on the pool surface through adjustments to windows and lighting equipment.
 4. Comprehensive daily records of pool operation & maintenance and of operational items inspected daily.

Hygiene Facilities Module Key Elements

- Swimmer hygiene is a critical component that plays a role in documented waterborne disease outbreaks and poor water quality.
- The Hygiene Facilities Module is a first step towards improving swimmer hygiene and facility water quality to reduce the associated health effects.

Hygiene Facilities Module Key Elements

- The Hygiene Facilities Module contains requirements for new or modified construction that include:
 1. Minimum distances for hygiene facilities from aquatic venues.
 2. Diaper changing stations to include changing units, adjacent sinks, soap dispenser, trash receptacle, and disinfectant products for cleaning.
 3. Implementation of rinse vs. cleansing showers.
 - Rinse shower: rinse by pool to reduce contaminants.
 - Cleansing shower: in bathhouse with warm water and soap.

Regulatory Program Administration Module Key Elements

- Regulatory guidance forms the framework from which an effective model aquatic health code is built.
- The Regulatory Program Administration Module follows best practice and research-based protocol to ensure the aquatic facility is operating safely.
- The guidance reflected in this module ensures all parties are working together from the initial building permits to the health code enforcement process.

Regulatory Program Administration Module Key Elements

- The Regulatory Program Administration Module contains requirements including but not limited to:
 1. Establishment of an independent Aquatic Health Advisory Committee.
 2. Defining imminent aquatic health hazards and corresponding remediation and enforcement procedures.
 3. Establishment of facility staffing requirements based on facility size and type.
 - Trained operators required for all aquatic facilities.

Regulatory Program Administration Module Key Elements

- The Regulatory Program Administration Module contains requirements including but not limited to (*continued*):
 4. Guidelines for plans and permits.
 5. Recordkeeping requirements.
 6. Swimmer empowerment methods.

Disinfection & Water Quality Module Key Elements

- Disinfection and water quality are critical components in maintaining bather health and comfort.
- Past outbreaks have often found that disinfectant levels and other water quality parameters were not maintained at proper levels.

Disinfection & Water Quality Module Key Elements

- The Disinfection & Water Quality Module contains requirements that include:
 1. Primary disinfection: minimum chlorine/bromine levels required.
 2. Secondary disinfection (UV, ozone) for “increased risk” aquatic venues (new or modified construction).
 - Increased risk pools: therapy pools, water activity pools, interactive water features, spray pads, wading pools, and other aquatic venues designed primarily for diaper-aged children.

Disinfection & Water Quality Module Key Elements

- The Disinfection & Water Quality Module contains requirements that include (*continued*):
 - Maximum allowable level of combined chlorine of 0.4 ppm.
 - Prohibition of cyanuric acid at any venue requiring secondary disinfection, spas, or indoor venues.
 - Proposed maximum level where permitted (outdoor aquatic venues) is 50 ppm.

Lifeguarding/Bather Supervision Module Key Elements

- Lifeguarding and bather supervision are critical components of bather safety.
- The Lifeguarding/Bather Supervision Module will help assure adequate training for all personnel who supervise aquatic facilities and that the facility has the necessary equipment and procedures in place for bather supervision and emergency response.

Lifeguarding/Bather Supervision Module Key Elements

- The Lifeguarding/Bather Supervision Module will contain requirements including but not limited to:
 - Lifeguarding training course elements to be included in curricula.
 - Lifeguard instructor qualifications.
 - Safety training (CPR, AED, etc.).

Lifeguarding/Bather Supervision Module Key Elements

- The Lifeguarding/Bather Supervision Module will contain requirements including but not limited to (*continued*):
 4. Staffing of lifeguards and attendants.
 5. Provision of lifeguard equipment and placement requirements.
 6. First aid equipment and facilities.
 7. Guidance for unguarded facilities.

Facility Design & Construction Module Key Elements

- Design requirements for aquatic facilities vary at the state and local levels.
- The Facility Design & Construction Module will help bring uniformity to the nation's aquatic facilities by providing current, science-based guidelines for design that state and local health departments can adopt.
- Aquatics industry professionals who work in multiple jurisdictions that adopt the MAHC will be able to follow a single code, not different codes in different jurisdictions.

Facility Design & Construction Module Key Elements

- The Facility Design & Construction Module will contain requirements for new or modified construction that include:
 1. Physical design and construction requirements of the pool and associated structural facilities, such as filter rooms and chemical storage areas.
 2. Identifying typical building code issues (i.e. electrical and structural aspects) and deferring to building codes on these items.

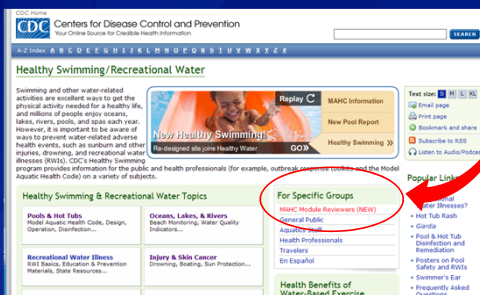
Conclusions: Planning for the Future with MAHC

- Higher standards and expectations for operation
- Improved technologies and systems-based solutions for:
 - Microbe inactivation
 - Chemical by-product reduction
- Increased scrutiny by public as health issues are highlighted in the media
- Strategic planning for future transition and replacement of Steering Committee and Technical Committee structure
 - Structure/organization to be developed

More Information: Healthy Water Website

<http://www.cdc.gov/healthywater/swimming/pools/mahc>

Email: MAHC@cdc.gov



- For more information, visit:

<http://www.cdc.gov/healthywater/swimming/pools/mahc/>

- To review MAHC Modules

<http://www.cdc.gov/healthywater/swimming/pools/mahc/structure-content/>

- Email: MAHC@cdc.gov

- "The findings and conclusions in this presentation have not been formally disseminated by CDC and should not be construed to represent any agency determination or policy."
