Welcome to the
Model Aquatic Health Code Network Webinar

Pool Chemistry for Healthy and Safe Swimming Week
Featured Presenters: Kayla Vanden Esschert, MPH and Mary Ostrowski

Thursday, May 23, 2019

Join the MAHC Network! Email MAHCnet@naccho.org and request to be added to the mailing list.

Please use your computer speakers to listen to today’s presentation.

Questions may be submitted via the chat box.

This webinar is being recorded.

We will begin at 1:00 PM Eastern.

Thank you for your interest and attendance!
Healthy and Safe Swimming Week 2019:

Pool Chemistry for Healthy and Safe Swimming

Kayla Vanden Esschert, MPH
ORISE Fellow
MAHC Webinar
May 23, 2019
Outline

1. MMWR report
   a. National data on pool chemical injuries, 2008–2017
   b. Toxic chlorine gas event in New York, 2018
2. Healthy and Safe Swimming Week activities
3. Preventing pool chemical injuries
4. MAHC and Mini-MAHCs
5. Pool chemical safety resources
Background: Pool Chemical Injuries

- Pool chemicals added to water to protect swimmers from spread of germs and prevent outbreaks linked to pools, hot tubs/spas, and water playgrounds
- However, pool chemicals can cause injuries if mishandled
- Estimated 3,000–5,000 U.S. emergency department (ED) visits for pool chemicals injuries every year
National Dataset

- Nationally representative sample of ~100 U.S. hospitals
- Data collected on emergency department (ED) visits for injuries involving consumer products
- Variables:
  - Product code (pool chemicals = 938)
  - Patient age, sex, race/ethnicity
  - Injury diagnosis
  - Affected body part
  - Patient disposition
  - Incident location
  - Narrative
Methods

- Each case weighted based on probability of hospital being selected
- Weights summed to produce national estimates
- 95% confidence intervals calculated according to CPSC’s direct variance method
  - Accounts for complex sampling design
- SAS 9.4 used to analyze data
Results

- During 2015–2017, an estimated 13,500 ED visits for pool chemical injuries
- Almost ⅔ of injuries occurred during the summer swim season (Memorial Day weekend through Labor Day)
Estimated Number of Emergency Department (ED) Visits for Pool Chemical Injuries — United States, 2008–2017

Median = 4,535
Patient Demographics — United States, 2015–2017

- Female: 35%
  - 0–17: 4,917
  - 18–45: 3,977
  - 46–64: 3,036
  - 65+: 1,579

- Male: 65%

No. of Estimated ED Visits vs. Age Group in Years
Pool Chemical Injuries — United States, 2015–2017

Injuries most commonly occurred when:

- Opening containers and breathing in vapor, fumes, or gases
- Adding pool chemicals right before swimmers entered the water
- Pool chemicals not kept out of reach of children and teens
Pool Chemical Injuries by Incident Location
United States, 2015–2017

When incident location was known, 83.8% of injuries occurred at a residence.
Toxic Chlorine Gas Incident in New York, August 2018

- Maintenance staff at public outdoor pool in NY noticed yellow substance seeping into pool
- Recirculation pump not running and no water flowing through system
- Pool area evacuated once more yellow substance entered pool and odor spread
- Investigation suggested a power outage the previous night could have failed to trigger an automatic shut off of the chemical feeders in recirculation system
  - Concentrated chlorine and acid mixed in the system created toxic chlorine gas
- Multiple persons (children and adults) reported nausea, vomiting, eye/face irritation, blisters, and vomiting; several sought medical attention
Response to Toxic Chlorine Gas Incident in New York, August 2018

- Pool was shut down for rest of the 2018 season
- Flow indicator was replaced and flow monitoring system resumed working properly
- New policies and procedures for 2019 swim season
  - Perform check of recirculation system, test pool water chemistry, and document findings every 2 hours while pool open
Healthy and Safe Swimming Week 2019

- Observance: May 20–26, 2019 before Memorial Day Weekend (start of swimming season)
- Theme: Pool Chemistry for Healthy and Safe Swimming
- Messages around pool chemical safety and tips for healthy swimming to be communicated before Memorial Day weekend and before Fourth of July weekend
Healthy and Safe Swimming Week 2019

Activities

- Commentary in Journal of Environmental Health: May 2019
- MMWR report: May 16
- Facebook Live: May 20
- Social media messages
- Times Square ads(?): June 30–July 7
- Radio media tour: July 2
Healthy Swimming Graphics

Don’t Pee in the Pool!

Pee mixed with chlorine creates chemicals that can make your eyes red and itchy.

www.cdc.gov/healthyswimming
Healthy Swimming Graphics

Safely Handle Pool Chemicals at Home

- Read and follow directions on product labels
- Keep chemicals secured and away from children
- Wear safety equipment, such as masks, gloves, and goggles

www.cdc.gov/healthyswimming
Healthy Swimming Graphics

If you wouldn’t bathe in this...

Why would you swim in this?

Do your own inspection before you swim!
Get an inspection checklist at:
www.cdc.gov/healthywater/swimming

Do you check restaurant inspection scores before eating?

Why not do the same before swimming?

Check online or onsite for your public pool’s latest inspection results.
www.cdc.gov/healthywater/swimming
Preventing Pool Chemical Injuries

- **Pool or hot tub/spa owners and operators**
  - Follow directions on pool chemical product labels
  - Wear safety equipment, such as goggles, while handling chemicals
  - Never mix different chemicals, particularly chlorine products and acid
  - Complete pool chemical safety training

- **Swimmers help keep mix of chemicals in water healthy and safe**
  - Shower before getting into the water
  - Never pee in the pool
  - Take young swimmers on bathroom breaks or check diapers every hour
2018 Model Aquatic Health Code (MAHC; 3rd edition)

- MAHC includes guidance on preventing pool chemical injuries
  - Operator training, include pool chemical safety in training
  - Facility design and construction
    - Safe storage of chemicals
    - Prevent mixing of chlorine and acid
    - Automatic shut off with no or low water flow
Mini-MAHCs

- Mini-MAHCs [https://www.cdc.gov/mahc/mini-mahcs.html](https://www.cdc.gov/mahc/mini-mahcs.html)
  - Concise documents that aggregate MAHC code and annex on specific public health issues
- **NEW** Mini-MAHCs
  - Preventing Pool Chemical Injuries
  - Preventing In-Line Production of Toxic Chlorine Gas Events
- Previous Mini-MAHCs
  - Improving Swimmer Hygiene and Diaper Changing
  - Reducing the Spread of *Cryptosporidium*
- MAHC change requests to be considered for the 2021 MAHC (4th edition) can be submitted to Council for MAHC through January 6, 2020 [https://www.cmahc.org/enter-change-request.php](https://www.cmahc.org/enter-change-request.php)
Pool Chemical Safety Resources

- CDC Pool Chemical Safety webpage
- State-based Resources
- Preventing Unintended Chemical Injection video
- Pool Chemical Safety video
- FREE Pool Chemical Safety Posters
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Tad Haileyesus
Vince Hill
Joe Laco

New York co-authors
Amanda Tarrier
Michele Donovan
Vince Hill
Gary Garofalo

Contact Info
Kayla Vanden Esschert, MPH
oys6@cdc.gov
(404) 718-7702

For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Preventing Accidental Exposure of Pool Patrons and Staff to Chlorine Gas from the Failure of Electrical Interlock Protection

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May 23, 2019

Mary F. Ostrowski
Senior Director
American Chemistry Council
Media reports dozens of incidents per year...
American Chemistry Council is activated

• Late 2017, began gathering stakeholders
• Regular teleconferences to develop a training video
• Videographer involvement
• Regular review and input
• Video completed Fall, 2018
• Debut at the 2018 WAHC, Charleston
• www.poolinterlocksafety.com
Interlock Safety Video Stakeholders

- CA Pool and Spa Association
- CDC
- CMAHC
- IPSSA
- JCC
- Kroc Centers
- Pool and Hot Tub Alliance
- Pool Chemical Manufacturers and Distributors
- Pool Equipment Manufacturers
- USA Swimming
- World Waterpark Association
- YMCA
CHLORINE GAS IS RELEASED INTO POOL AREA
Best practices for pool staff

- Clear the pool and deck immediately when:
  - No flow is detected
  - An unexpected or manual deactivation of the circulation pump occurs
  - Interlock system is activated (e.g., alarm), indicating a problem with the flow system
Best practices for pool staff

• Venue should remain closed until the cause of the interruption is understood and corrected, the system operates correctly for at least 5 minutes, and water is tested for proper pH and free chlorine level

• Staff training should include recognition of high-risk scenarios that could lead to chlorine gas exposures
Questions & Answers

Kayla Vanden Esschert, MPH
ORISE Fellow, Healthy Swimming Program
Centers for Disease Control and Prevention

Joseph Laco, MSEH, RS/REHS
CDR, US Public Health Service
Centers for Disease Control and Prevention

Grace McClain (Facilitator)
Program Analyst, Environmental Health
NACCHO

Mary Ostrowski
Senior Director, Chlorine Issues
American Chemistry Council

Terry Snow
Independent Pool and Spa Service Association