

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

#### Flushing Guidance for School Building Drinking Water Quality



#### Holly Gohlke, R.S., M.S.A. School Drinking Water Program 517-220-1904 | GohlkeH@Michigan.gov

www.Michigan.gov/SchoolWater



## Items for Discussion

- Importance of quality drinking water
- Importance of moving building water
- Establishing a flushing program
- Flushing methods & general procedures
- Resources and website
- Questions and discussion

### Importance of Quality Drinking Water

Children spend a significant portion of their day in school buildings



Courtesy of EPA



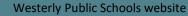
### Importance of Quality Drinking Water

# Public water must meet state and federal water quality standards



Courtesy of Ken Schulze/Shutterstock



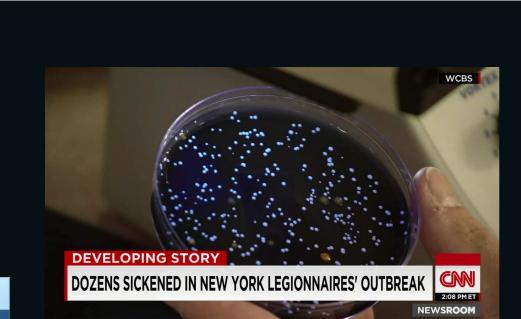


#### Poll Question #1



### Importance of "Moving" Building Water

Prevent stagnation Improve quality Maintain system





Moving "old" water out and "fresh" water in

Water quality management practices can and should be done to prevent water stagnation and promote quality drinking water





#### Poll Questions 2 & 3





Decisions about when and how-to flush are specific to the building, plumbing system, and potential, suspected or known contaminant(s).



- Understand your building plumbing system
  - Age, condition & complexity
  - Materials (service line, pipes, valves, fixtures)
  - Flow of water from entry to furthest point in the building
  - Location of all water outlets, fixtures & water use devices
  - Identify potential cross connections & pressure loss
  - Water usage/non-usage patterns
  - Water quality history

A flushing program is dynamic!



- Understand factors and categories of contaminants
  - Acute vs chronic
  - Aesthetic vs public health concern
  - Time required to flush contaminant out
  - Ability of contaminant to attach to pipe surfaces
  - Ability of contaminant to volatilize (evaporate or disperse in vapor)

- Determine who is on your team, who can help
- Develop a communication strategy
- Develop the procedures
- Address safety & budget
- Impact on water disposal
- What determines effectiveness?
- Write it up!
- Plan, implement, maintain & revise





- Communications with the public
  - Flushing categories
    - Emergency
    - Routine/Regular
    - Maintenance & awareness
  - Action plan
    - Bag fixtures
    - Signage
    - Bottle water





#### **Poll Question 4**





- When should flushing occur?
  - Prior to re-opening a school building
    - After extended breaks (summer, winter, spring, in-service, etc.)
    - After emergency shut down's
  - Throughout the school year
    - After weekends
    - Every use, every day, once a week, once a month
  - After plumbing or fixture changes or disturbances to the system
  - In response to system or fixture contamination

# Flushing Methods

#### "Fresh Tap Method"

- Refreshing the water
- Drinking or food preparation fixtures
- Remove soluble contaminants
- Individual fixture flushing
- Flush for 30 seconds to a minute
- Daily, weekly, or monthly
- Every use flushing

#### "High Velocity Method"

- Remove "old" water
- Removes sediments & biofilms
- Based on maintaining 3 ft/sec velocity
- Flush of all water outlets
- Flushing occurs in zones
- Zone flushing for at least 15 minutes
- Once to twice a year
- A week to a few days before reopening



# **General Flushing Procedures**

- Plan & Communicate
- Integrity check
  - Inspect plumbing for leaks, corrosion, broken pipes
  - Make sure drains can handle flush
- Safety equipment check
  - Use as needed for potential airborne hazards during flushing
- Remove or by-pass devices
  - Point of entry treatment
  - Point of use aerators & filters
- Flush cold-water plumbing first, then hot water
- Follow manufacturer recommendations for flushing water use devices
- Replace devices (install new cartridge filters)



# "Fresh Tap Method" Procedure

- Begin at drinking/food prep fixture closest to water entry
- Flush for at least 10 minutes
- Next flush farthest fixture in each wing on each floor
- Flush for at least 10 minutes
- Then flush each fixture for 30 seconds to a minute
- Work your way back towards the water entry point
- Refrigerated water fountains need about 15 minutes to flush
- Other water-using devices may require different procedures



#### "Fresh Tap" Before Every Use



# "High Velocity Method" Procedure

- *Pre-determine* flushing zones
- Begin at first zone & open all cold-water fixtures
  - Ensure average of 3 ft/sec flow through meter
  - Start timer & flush for at least 15 minutes
  - Systematically flush toilets
  - Make frequent rounds to monitor water levels in sinks or adjust zone
- Close all fixtures in first zone and proceed to next zone
- Repeat process



#### Poll Question 5 & 6





# Summary

- Children need quality drinking water for health & development
- Building plumbing factors may negatively impact the water
- Flushing is an essential part to water quality management
- A flushing program takes planning & communication
- A flushing program is dynamic implement/maintain/revise
- Flushing is an effective, low cost tool
- The only way to know the quality of water is to test it!



#### **Other Resources**

- The U.S. Centers for Disease Control and Prevention (CDC) Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operation: <u>https://www.cdc.gov/coronavirus/2019-</u> <u>ncov/php/building-water-system.html</u>.
- CDC guidance: Toolkit: Developing a Water Management Program to Reduce Legionella Growth and Spread in Buildings: <u>https://www.cdc.gov/legionella/wmp/toolkit/index.html</u>.
- The US Environmental Protection Agency (EPA) posted information that building owners should use to minimize water stagnation during extended closures and to address building water quality: <u>https://www.epa.gov/coronavirus/information-maintaining-or-restoring-water-quality-buildings-lowor-no-use</u>
- Purdue University Center for Plumbing Safety, Flushing Plan videos: <u>https://engineering.purdue.edu/PlumbingSafety/resources/flushing-plans</u>
- Environmental Science, Policy & Research Institute: <a href="https://esprinstitute.org/wp-content/uploads/2020/04/FINAL\_Coronavirus-Building-Flushing-Guidance-20200403-rev-1.pdf">https://esprinstitute.org/wp-content/uploads/2020/04/FINAL\_Coronavirus-Building-Flushing-Guidance-20200403-rev-1.pdf</a> and <a href="https://esprinstitute.org/wp-content/uploads/2020/05/FINAL\_Reducing-Risk-to-Staff-Flushing-Buildings-20200501.pdf">https://esprinstitute.org/wp-content/uploads/2020/05/FINAL\_Reducing-Risk-to-Staff-Flushing-Buildings-20200501.pdf</a>



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517-220-1904 Gohlkeh@Michigan.gov



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### Gohlkeh@Michigan.gov

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#### Poll Question 7 & 8



