Supporting Building Owners in Response to the COVID-19 Pandemic and Beyond

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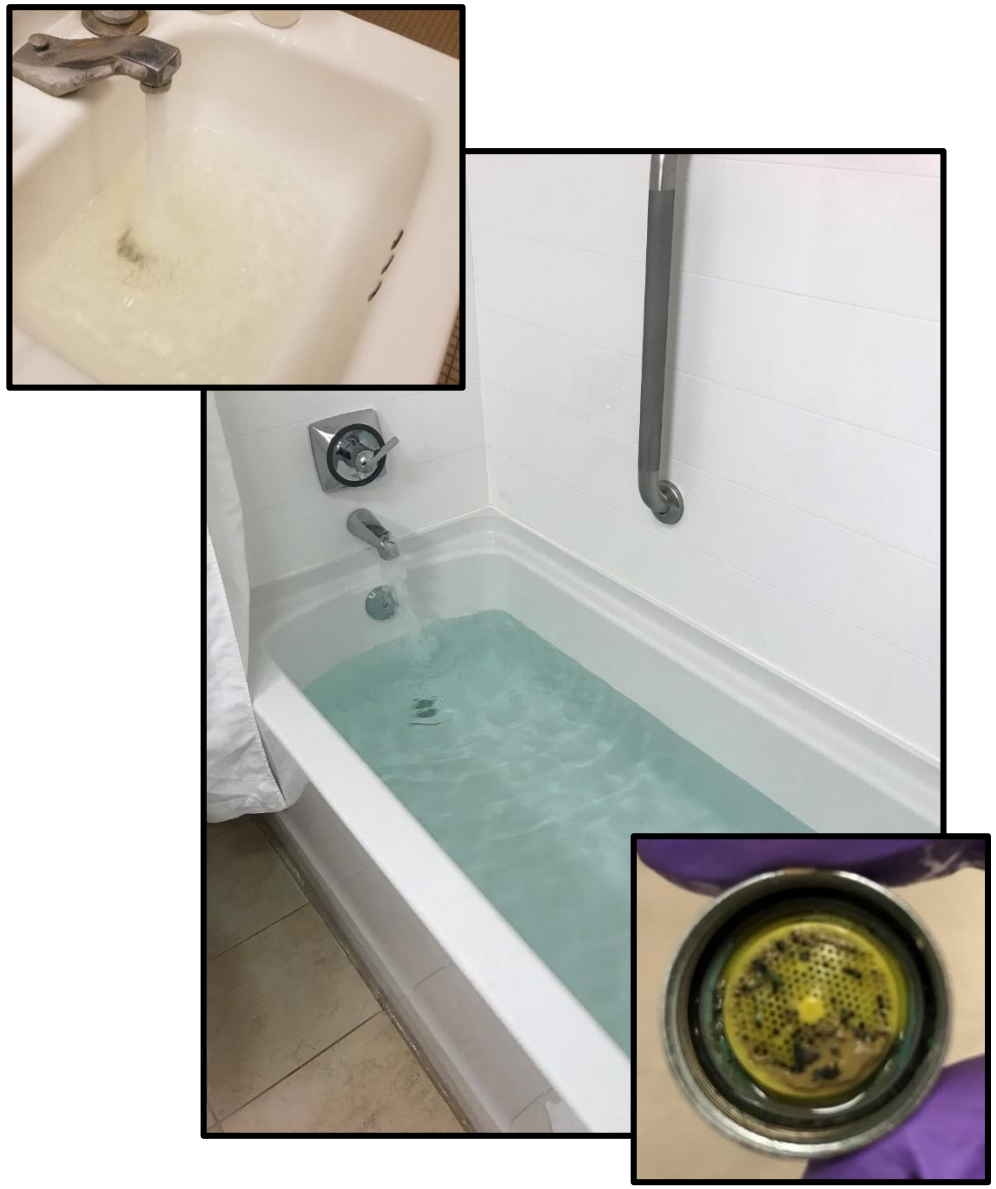
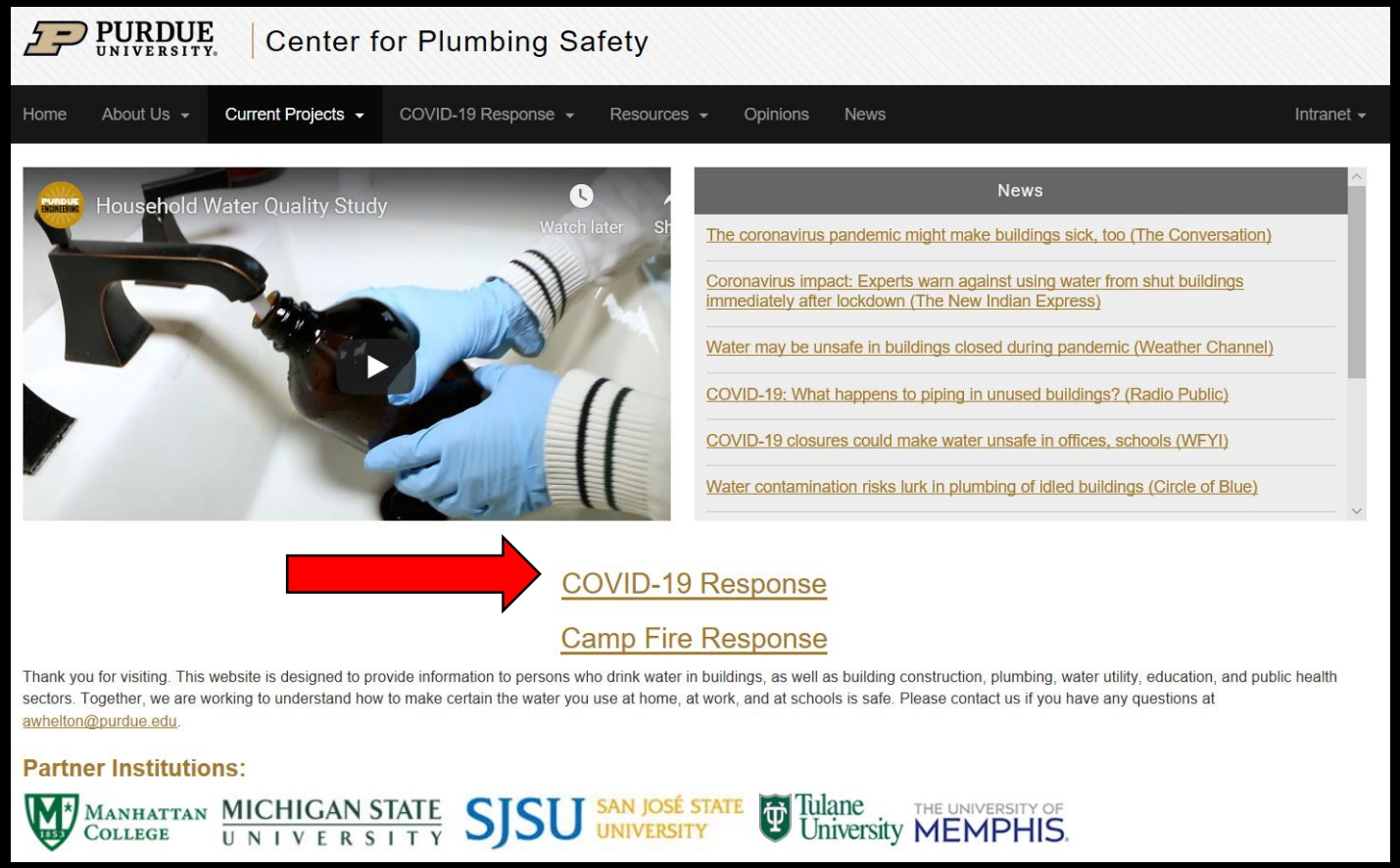


More info… www.PlumbingSafety.org



- ✓ Plumbing education videos
- ✓ Flushing plans
- ✓ Plumbing explainers
- ✓ List of projects
- ✓ Scientific opinions
- ✓ Resources ➔ presentations
- ✓ Scientific reports
- ✓ External plumbing docs
- ✓ YouTube Channel

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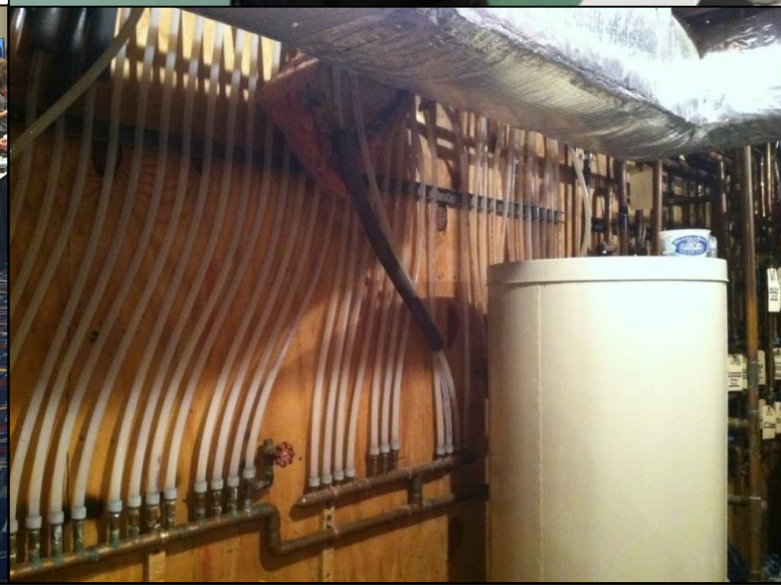
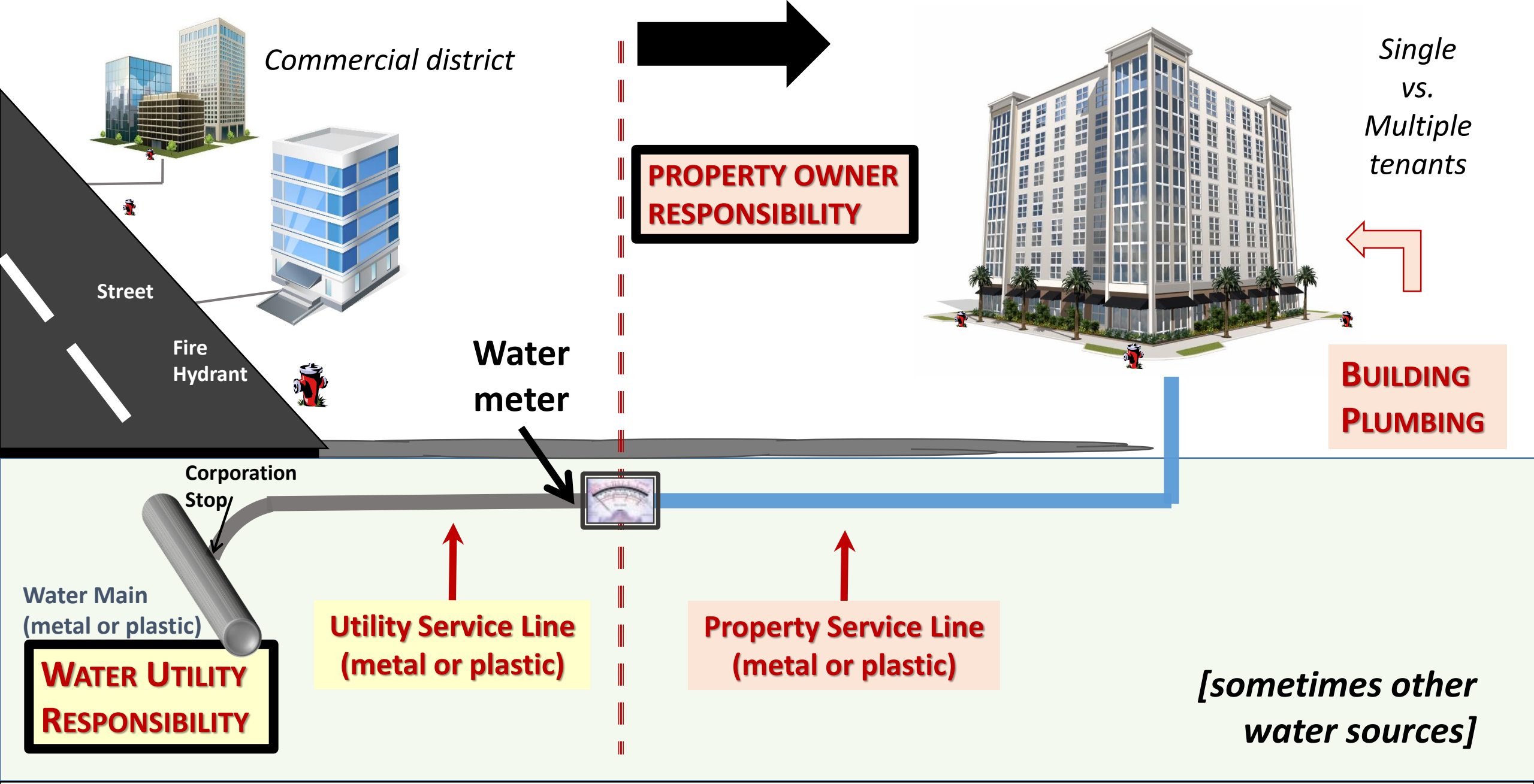



Commercial district
Street
Fire Hydrant
PROPERTY OWNER RESPONSIBILITY
Single vs. Multiple tenants
BUILDING PLUMBING
Water meter
Corporation Stop
Water Main (metal or plastic)
WATER UTILITY RESPONSIBILITY
Utility Service Line (metal or plastic)
Property Service Line (metal or plastic)
[sometimes other water sources]

Stagnation *noun*

stag·na·tion | \ stag-ˈnā-shən

a state or condition marked by lack of flow, movement

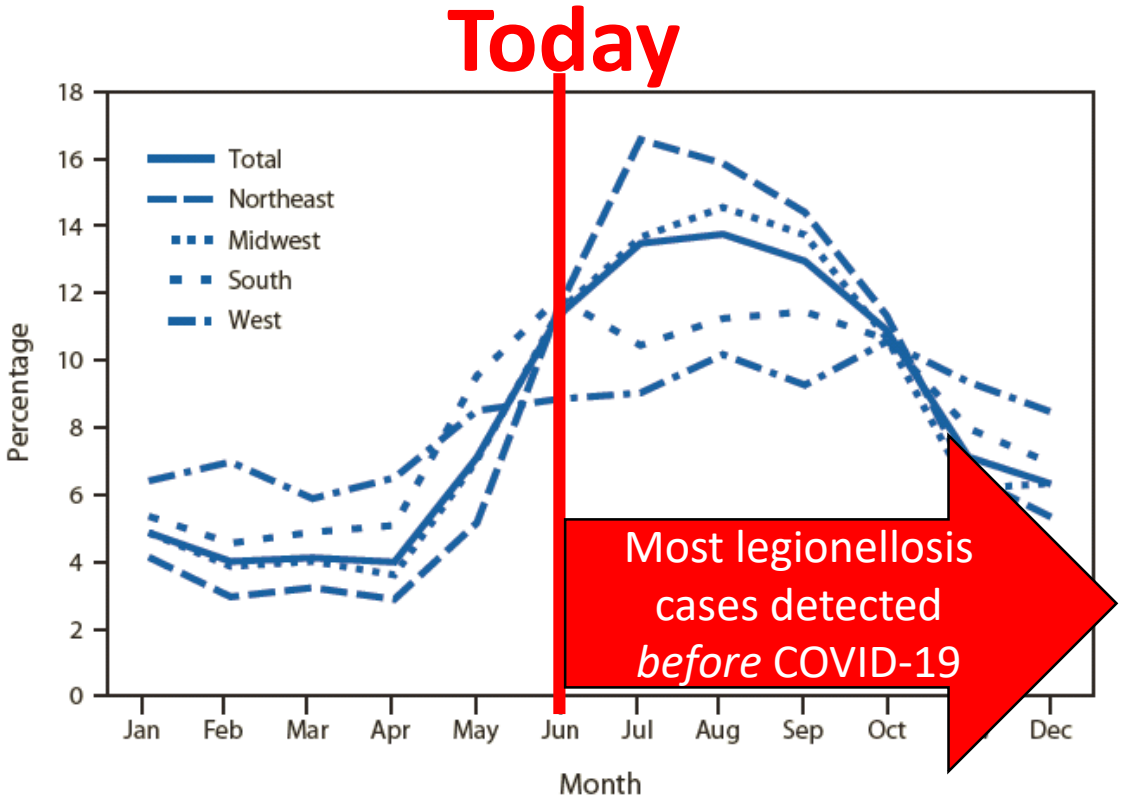
Merriam-Webster®

When water does not flow well; areas of stagnant water encourage biofilm growth and reduce temperature and level of disinfectant

CDC
Centers for Disease Control and Prevention™

Available information only pertains to less than 2 weeks of stagnation or low water use

- **Copper** can leach, acute effects
  - Nausea, vomiting, diarrhea, abdominal cramps
- **Lead** can leach, acute and chronic effects
  - Nausea, vomiting, diarrhea, abdominal cramps, longer-term developmental issues with children
- **Scale** can be suspended
- **Harmful organisms** (e.g., *Legionella pneumophila* and other opportunistic pathogens) can grow - better
  - Many organisms cause respiratory illness, and other infections can occur



Exposure Routes of Concern: Ingestion, Dermal, Inhalation

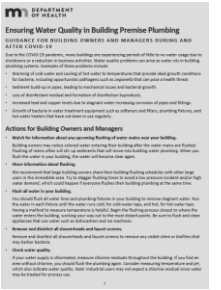
U.S. National Science Foundation RAPID Award 2027049

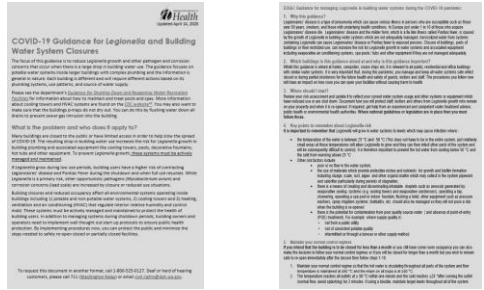
Shutdowns and Consequences - Extreme Plumbing Stagnation and Recommissioning

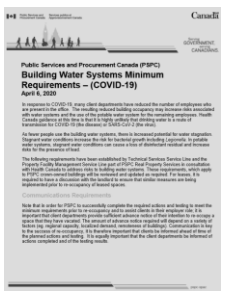
1. Support to the plumbing and public health sectors on building water safety guidance and decisions, ***ongoing***
2. Building water safety review due to prolonged stagnation with experts from 8 private and public sector organizations, ***ongoing***
3. Field testing to determine how impacted building water safety is in actual large buildings, ***ongoing***
4. Lab testing to determine how to fully recover contaminated building water system devices and equipment, ***planned***
5. Help transform public awareness, ***ongoing***

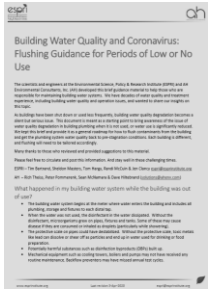
Helping

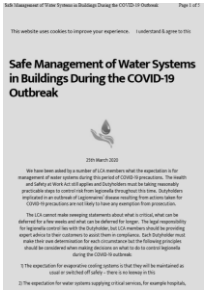
SAFE WATER ENGINEERING

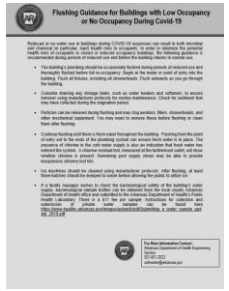




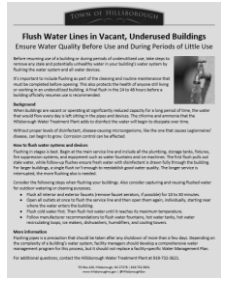


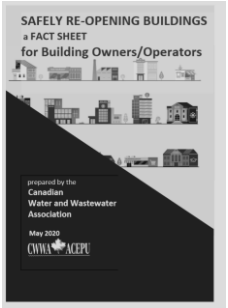




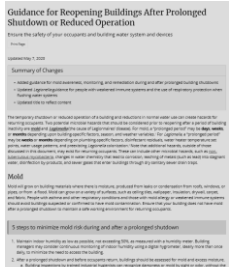


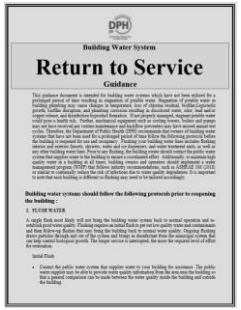
Since March 2020, there have been more than **45+** guidance documents telling building owners what they could do to prevent and deal with stagnation situations.

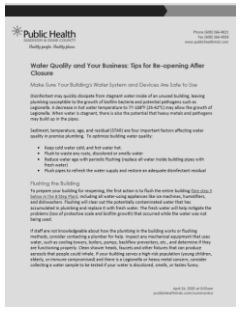


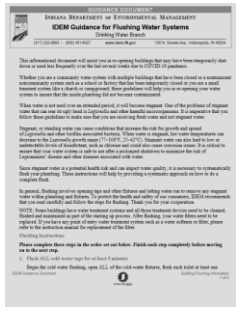


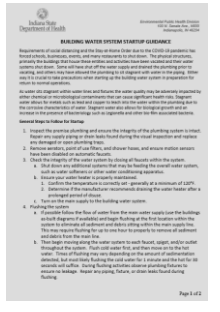
Many differ quite dramatically. Some lack key info (safety, devices, sensitive populations, etc.).

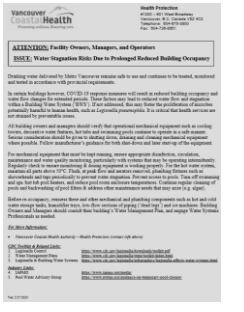


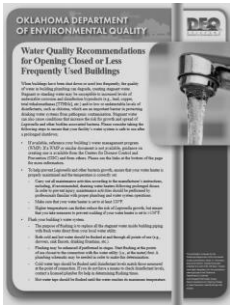












Building owners and health departments are asking:

What *specifically* do we do now?

Lot's of 'guidance' with few operational details.

What We're Hearing and Seeing

- Water fountains have been disabled in some schools. Occupants/ visitors told to bring their own water. This will lead to lower use/stagnation.
- Some schools still -just last week- heard leaving water in plumbing for 3+ months is a bad idea. Now just reaching out for help because they're concerned.
- Some health department water staff being tasked to other COVID19 support. Some not responding to inquiries for help from building owners.
- Some health departments had little experience with building water systems before the pandemic.
- Some health departments concerned about waterborne disease outbreaks as buildings reopen or maintain low occupancy/low water use.

Roles and Actions?

Water Supplier

- Review water meter records, notify BO and HD about low use
- Relentlessly educate customers
- Temporarily expand disinfectant residual testing and flushing
- Temporarily increase disinfectant level

Health Department

- Relentlessly educate building owners
- Temporarily require water use and action log/ reporting to maintain cert. of occupancy
- Advise building owners, onsite support
- Pay attention to sensitive populations
- Notify laboratories about water testing

Building Owner (may or may not know water)

- Contact the health department for guidance and onsite help
- Contact the water supplier about the incoming water and onsite help
- Keep water fresh, clean plumbing, don’t allow prolonged stagnation
- Test water temperature (thermometer), disinfectant levels (handheld meter)
- Create and maintain water use, flushing, and testing records
- Contact external experts for help

What Health Departments Can Do

1. Setup a **Building Water Response Team** (or have several people who are the go to professionals).
   A. Advise-Receive/answer questions from building owners
   B. Conduct site visits: assistance and investigations
   C. Equipment: Thermometer, handheld disinfectant residual meter (total $500)
   D. Be trained on basic building water system testing, maintenance, and investigation

2. **Designate several people** to take the Summer 2020 Online Short-Course for Building Water Systems offered by Purdue (next slide)

Interested? *RAPID* Health Department Building Water System Response Team Training – Online Short-Course Offered by Purdue University *for Health Officials*

Rapid and flexible building water education opportunities for health officials are lacking.

We will provide health department staff rapid training on building water system safety and response issues so they can better support their community. Material to be covered will include building water quality, design, testing, device, and remediation approaches.

TOPICS:

1. Introduction to Building Water Systems and Identifying Systems at Risk
2. Building Water Quality (and Variability) Explained
3. Building Water System Flows and Transport
4. Contaminant Exposure and Risk
5. Rapid Water Testing: Where, Why, What, How
6. Construction Drawings, Flushing, and Flushing Plans
7. Interventions and Building Water Management Plans

Tentatively: June 19, 2020 – August 13, 2020, 6 events + 4 live Q&A Sessions/Office Hours

If interested, email awhelton@purdue.edu.

Pre-requisites: Be at a public health department, any role.

Summer 2020 Health Department Online Short-Course

"Building Water Systems"

Instructors:

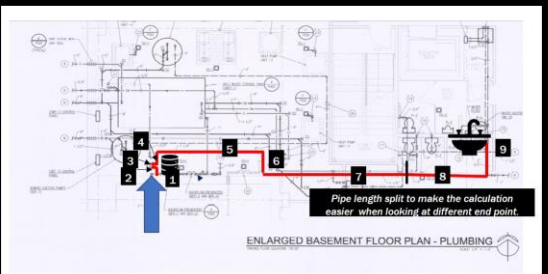
Prof. Andrew Whelton, Dr. Caitlin Proctor, Civil, Environmental , Ecological, Biomedical, Materials Engineering Depts.

Building water systems are sitting at low to no occupancy across the globe due to the COVID-19 pandemic. Stagnant water in them can pose significant human health risks due to chemical and microorganism accumulation and exposure. Health professionals will be introduced to engineering and science principles underlying building water systems, current issues associated with the pandemic, and strategies for investigating and responding to issues.

PURDUE UNIVERSITY

The learning objectives are to:

1. Describe the chemical and microbiological contaminants common to building water systems for stagnant and flowing water,
2. Explain the factors that control contaminant accumulation in building water systems,
3. Recognize water testing methods and limitations,
4. Identify remediation practices for reducing contaminated water from the systems, and
5. Recognize how to create and test building water system flushing plans,
6. Develop strategies to avoid and remediate water quality problems, using real-building examples, as-built drawings, and other resources.
7. Recognize where to find additional resources.



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Conclusions

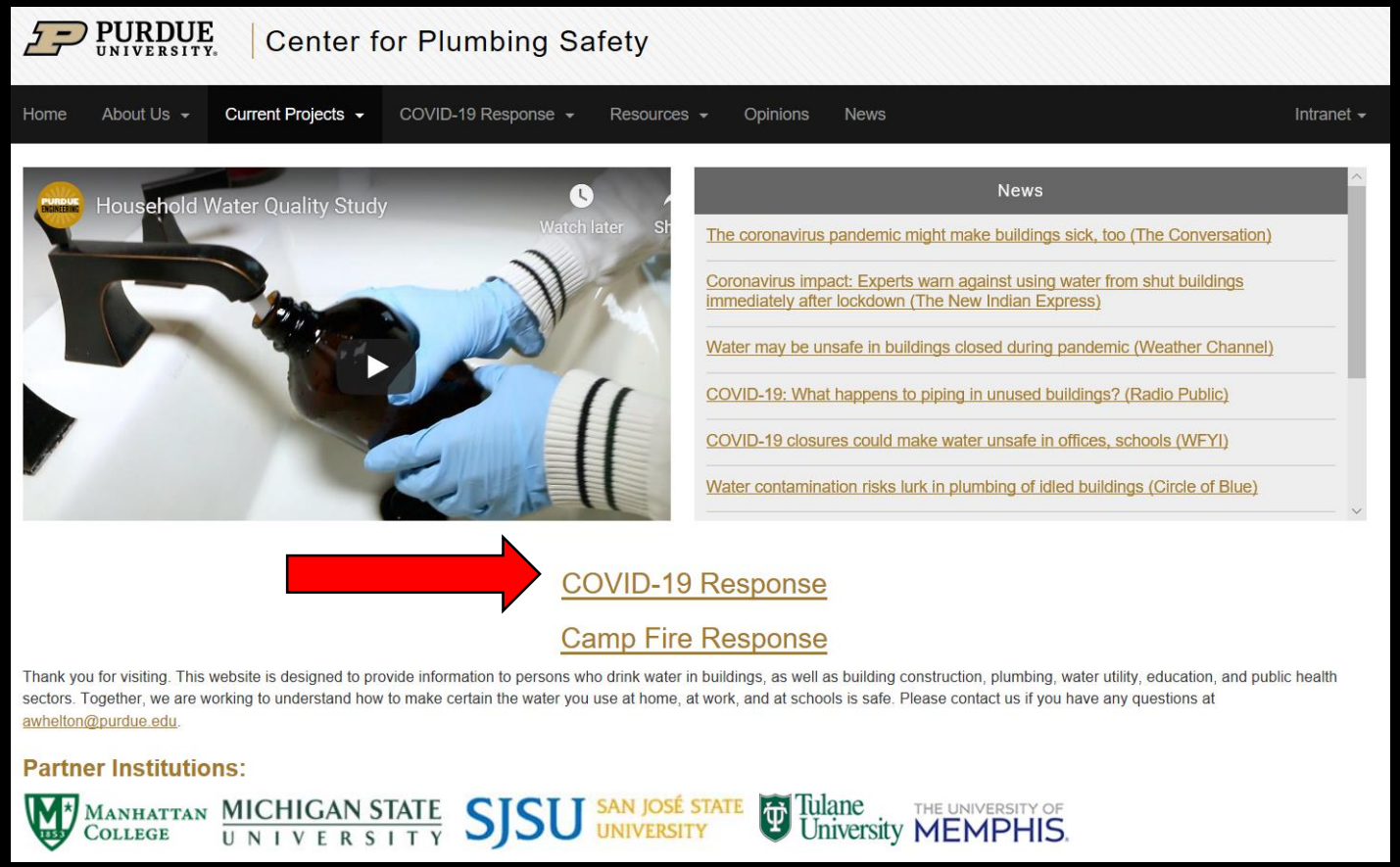
1. Low water use and stagnation poses serious health risks. Keep water fresh.

2. Health departments should operationalize water system support - Building water system response teams.

3. Due to health department time/labor constraints we are going to offer a rapid health department online short-course.

4. Reach out to us if you have questions or need help. We can help you better help your communities.

Thank you… www.PlumbingSafety.org



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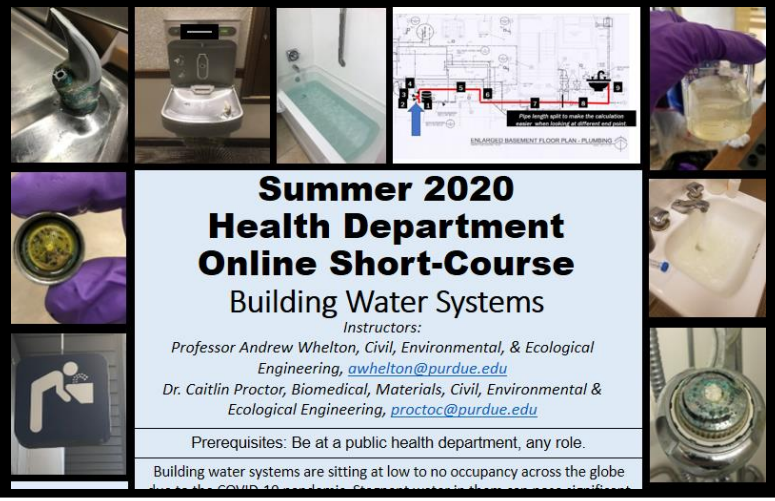

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