ASPE
American Society of Plumbing Engineers™
BALTIMORE

Monthly Newsletter **DECEMBER 2019**

Upcoming EVENT

Date: **December 13, 2019**

Time: **6:00pm to 8:00pm**

Place: **Mustang Alley's Baltimore**

Topic: **Annual Holiday Party**

See details on page 2

ASPE
CHAPTER AWARD OF MERIT
Recipient 2017-2018

In This Issue

EVENT LOCATION !

Mustang Alley's
Bar Bowling and Bistro

1300 Bank Street
Baltimore, MD 21231
410-522-2695

WWW.BALTIMOREASPE.COM

Local Chapters are not authorized to speak for the Society. Newsletter questions please contact Jason Eagles

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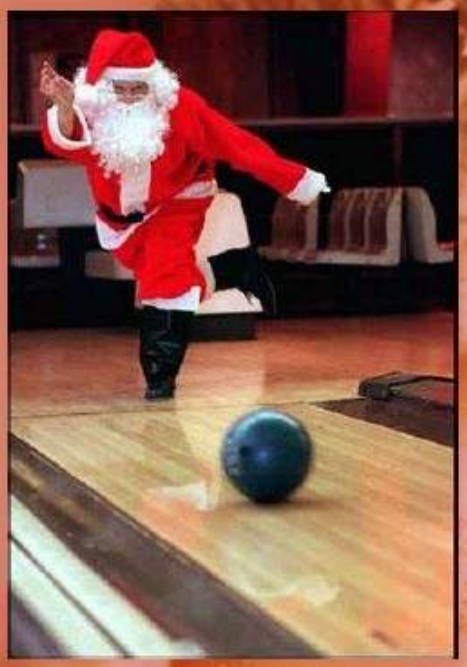
Baltimore Chapter of **ASPE** cordially invites you to our

ANNUAL HOLIDAY PARTY



December 13th, 2019
7:00PM to 10:00PM

Bowling 7:30PM – 9:30PM

Mustang Alley's

1300 Bank Street
Baltimore, MD 21231

*Event includes **Bowling, Food & Beverages.***
(Santa outfit: optional)

RSVP, on our website by 12/6/19
baltimoreaspe.com

Want to help **sponsor** the event? Contact Kathy Dwyer at kdwyer@ejdwyer.com or Jeff Edwards at JEdwards@muellerassoc.com

For details contact Brian Crisp at vpmember@baltimoreaspe.com

www.mustangalleys.com

Admission is free! Just bring an unwrapped gift or a check donation to "Marine Toys for Tots Foundation"

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- As a paid advertiser you will have your advertisement in the newsletter for a full year (9 editions) and company logo displayed on the Chapter website.
- Ads for the year will begin in the September issue and run through the May issue.
- All ads must be paid in full prior to the advertisement being included in the newsletter.
- Advertiser must provide ads in high resolution PDF format. Logo must be provided in .jpeg format 200px wide max.

•Cost per advertisement size is as follows:

Size	Per Year
Full page	$750
½ page	$500
Bus. Card	$250

Please Contact Jason Eagles or Jeff Edwards

Make checks payable to Baltimore Chapter of ASPE. Please contact the chapter Treasurer with any questions.

Kathy Dwyer
EJ Dwyer Company Inc.
kdwyer@ejdwyer.com

Jeffrey W. Edwards, CPD ,GPD
President

President's Report

Here we are with the Holiday season just weeks away, the end of 2019 and the beginning of another new year right around the corner.

The start of our chapter meeting season has been very successful. We look forward to our regular technical meetings starting up in January with new and interesting topics for our remaining monthly meetings. Please refer to our newsletter for exact meeting dates and topics.

I hope everyone will be able to attend our Holiday Party at Mustang Alley's on Friday, December 13th. We are planning for socializing, bowling, food and holiday cheer from 7-10 PM. Attendance fee is free but we do ask everyone to bring a new unwrapped toy that will be donated to the Marine Toys for Tots Foundation. You can register to attend on our website. Please register if you are attending so we can coordinate the food and beverage requirements beforehand.

Last, but not least, I want to wish everyone a Happy & Merry Christmas and a safe Happy New Year.

Best Regards,
Jeff Edwards, CPD, GPD
President-ASPE Baltimore Chapter

ASPE
CHAPTER AWARD OF **MERIT**

We encourage our members to share their experiences with our chapter on social media with the hashtags:
#ASPEBaltimore
#AYPBaltimore
#WOABaltimore

If you have a story or photo you would like to share on our Facebook or LinkedIn page, let us know. We are proud to support our chapter members!

We are very excited to announce that we are collaborating with our AYP members to interview members of our chapter for our new Member Spotlight Series! Each week, we will tell you about a different member of our Chapter to learn about their experience in the Plumbing Engineering field.

Follow us on LinkedIn to read about our first three integral members; Jeff Edwards, Chuck Swope and Kathy Dwyer.

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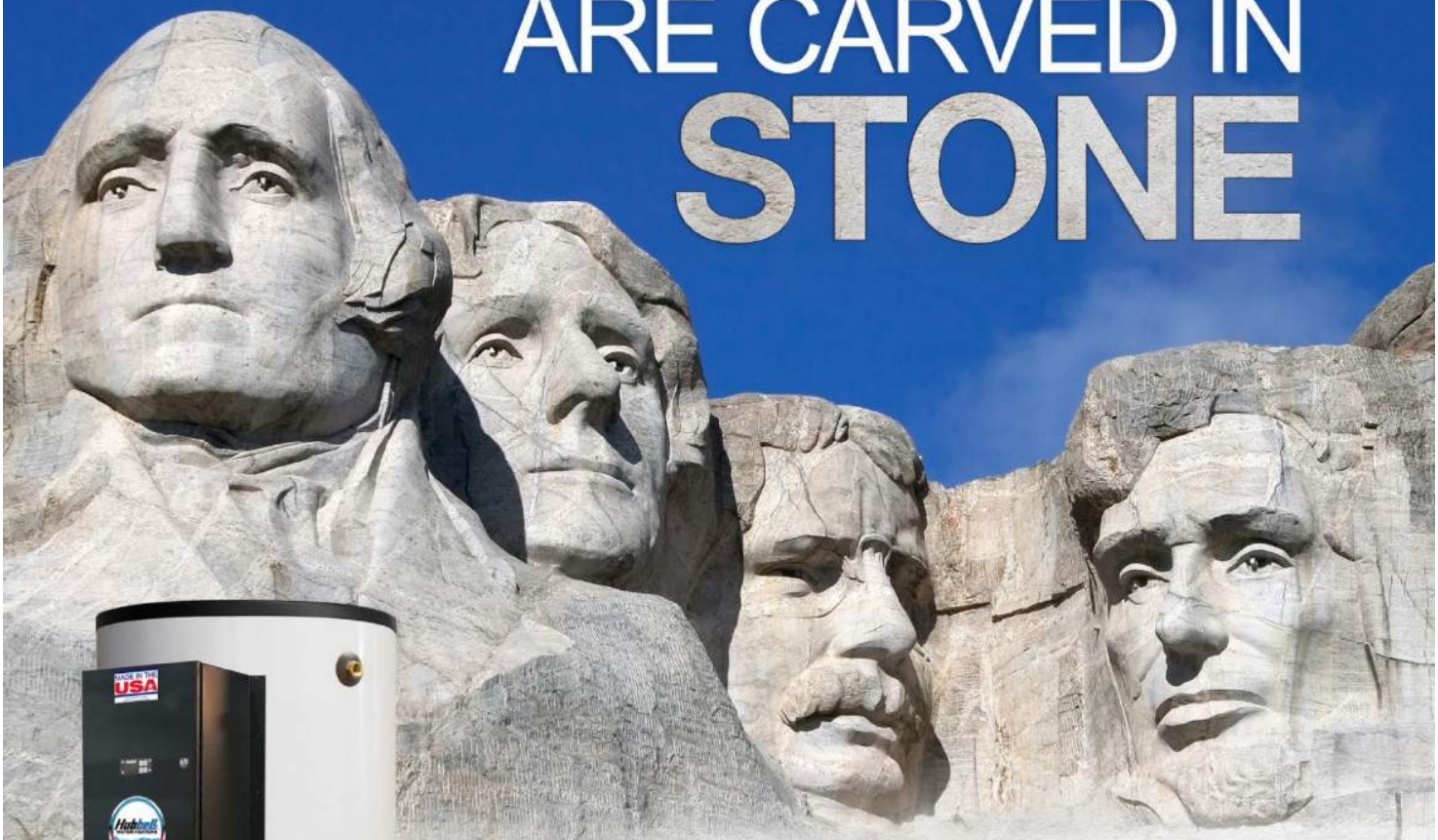

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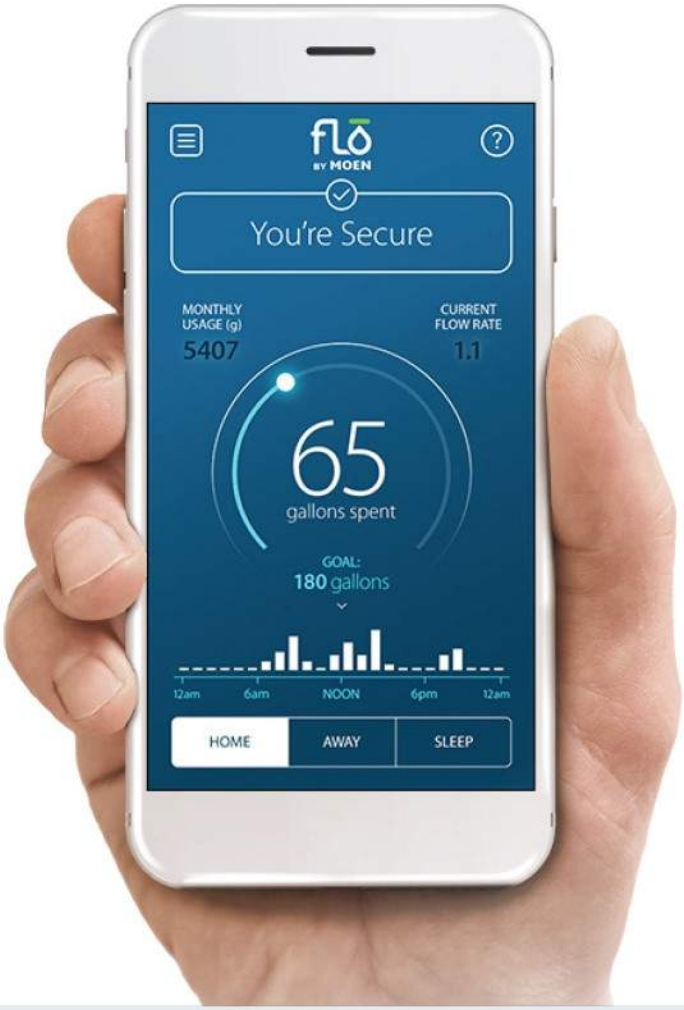

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Chuck Swope, PE, CPD, LEED AP BD+C
Vice President—Technical

Technical Report

I'd like to begin by thanking Dr. William Rhoads for his great presentation on Opportunistic Pathogens. I must admit, I thought that we had covered how to deal with legionella at length from our previous presentations and charettes. However, Dr. Rhoads' presentation was much more than "keep the water hot and keep it moving". He covered great details like how the pathogens can persist even after treating the water by retreating into an amoeba cocoon and how just raising the temperature of your storage water heater isn't enough to kill the bacteria. I appreciated the new perspective we have now from this information, as it also cemented some of the practices we already use.

Now for December, we are shifting gears and having our Annual Holiday Party on December 13th. As you may have seen from our regular invites, the party will be held at Mustang Alley's, which is now under new management! We had such a great time last year and since we are collecting for Marine Toys for Tots, it's for a good cause too. Just RSVP via our website and bring an unwrapped give or check for donation and we'll take care of the rest.

Don't forget to register early for our January Meeting, where Terry McShane from McShane PC will address Professional Ethics. This will count for the Professional Ethics unit of the continuing education requirements for Maryland professional engineering licenses. Attendance will be limited, so be sure to tell your friends after you've registered yourself.

CPD Review Class 2020

The Washington DC and Baltimore ASPE Chapters will be providing a joint Baltimore-Washington, DC ASPE Chapter CPD Review Session on Saturday, February 1, 2020 at the training center of E.J. Dwyer Co. in Annapolis Junction, MD. (Note: A bad weather make-up date will be scheduled for no later than Saturday, February 29th.) The session will be from 8:30 AM to 3:30 PM (or longer as needed) with a lunch break. Bagels, juice & coffee in the morning and lunch will be provided by the good people of E.J. Dwyer Co. Directions to the office in Annapolis Junction (north of Laurel) may be found on their company website at www.ejdwyer.com under Contact Us or by clicking google maps link: https://goo.gl/maps/4nEvRNG6kEK2

Any ASPE member interested in attending this session is required to forward an e-mail to either Kathy Dwyer or Ned Dwyer at the following respective addresses: kdwyer@ejdwyer.com and ndwyer@ejdwyer.com

Please take notice of the following:

- Registration for the CPD Exam (through ASPE) opens December 1, 2019 and closes March 19, 2020. Link to website: https://aspe.org/CPDExam
- Note the reference to any ASPE member, since it is generally more economical for one registering to take the CPD exam to be an ASPE member prior to registering for the exam. Please contact a local ASPE Chapter VP Membership ASAP to become a current member;
- ASPE members not classified as Full shall be subject an exam eligibility evaluation by Society that may take as many as five business days. (You may wish to take the initiative and visit the ASPE web-site and preview the requirements for Full membership to see if you would qualify); and
- The ASPE CPD Exam is scheduled to take place March 30 thru April 5, 2020.

Attendees to our review class are expected to bring to the review session at a minimum a calculator, writing materials, a copy of the CPD Review Manual and a hard copy of all attachments that may accompany any future e-mail follow-up responses. NOTE: CPD Review Manuals will be available for purchase before and following the CPD Review Session.

I look forward in seeing you at the review class.

Sincerely,

David Bailey

David M. Bailey, CPD, GPD, FASPE

DATE: February 1, 2020 from 8:30 AM to 3:30 PM
LOCATION: E.J. Dwyer Co. 10910 Pump House Road, Annapolis Junction, MD 20701
CONTACT: Kathy Dwyer – kdwyer@ejdwyer.com – Mobile: 443-250-0285
Ned Dwyer – ndwyer@ejdwyer.com – Mobile: 443-250-4275
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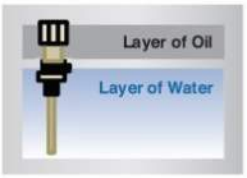

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Christopher Imhof, PE, CPD
Education Committee Chair

IECC and IGCC in the State of Maryland

By Chris Imhof PE, CPD

In March of this year, the State of Maryland adopted (with amendments) the 2018 International Energy Conservation Code (IECC) as part of COMAR 09.12.51. This section of COMAR shall be known as the Maryland Building Performance Standards (MBPS) Regulations. Local jurisdictions have up to 12 months after State adoption of MBPS to adopt and amend the IECC for local use and enforcement. The local jurisdictions can only amend Maryland's adopted version of the IECC to make it more stringent. The MBPS incorporates by reference the 2012 International Green Construction Code (IGCC).

In May 2011, Maryland House Bill 972 was passed and allows local jurisdictions to adopt and amend the IGCC as an optional code as an addition to the mandatory MBPS. Currently, the 2012 IGCC is adopted as Code by the cities of Baltimore and Rockville, as well as Montgomery County. This Code is mandatory for all structures in the City of Baltimore, and mandatory for all commercial and multifamily buildings in the City of Rockville. Both jurisdictions have exceptions to requirements, including compliance with other green standards such as LEED, ICC 700, and ASHRAE 189.1.

The IECC has updated its service water-heating equipment performance efficiency requirements to that of the current Federal requirements. The IECC still includes the requirements for volume and maximum length of hot water piping. The IECC allows buildings to be incompliance with ANSI/ASHRAE/IESNA 90.1-2016 in lieu of its own requirements.

The IGCC chapter relating to water use changed from "Chapter 7 – Water Resource Conservation, Quality and Efficiency" to "Chapter 6 – Water Use Efficiency". All sections of Chapter 6 are now considered mandatory provisions. New requirement for water bottle filling stations is as follows: "water-bottle filling stations shall be an integral part of, or shall be installed adjacent to, not less than 50% of all drinking fountains installed indoors on premises". The IGCC has expanded requirements for water re-use. Golf courses and driving ranges must use either municipally reclaimed water or alternate on-site sources of water for landscaping. For other landscaping areas, not greater than one-third of improved landscape area is allowed to be irrigated with potable water. There are provisions that allow for temporary use of potable water during landscape establishment period. New requirements for special water features. Ornamental fountains and water features shall be supplied either by alternative on-site sources of water or by municipally reclaimed water. There are exceptions if alternative sources of onsite water or municipally reclaimed water is more than 500 ft away. A new requirement for pool and spa backwash to be re-used, either on landscaping, in pool or spa system, or other application. New requirement for "dual water supply plumbing". Dual water supply plumbing shall provide separate water piping for flushing of water closets and urinals where a sufficient supply of reclaimed water or alternate on-site sources of water is available or is planned to be available within 5 years of project completion. The format for water consumption requirements of fixtures and equipment has been revised. The maximum flow rates and flush volumes for fixtures has been updated. All water closets shall now have a maximum full flush volume of 1.28 gallons per flush. The allowance for public and remote 1.6 gallons per flush water closets has been removed. The provisions regarding irrigation systems have been significantly increased. This includes system design, controls, and plant types.

The hot water distribution provisions have been removed from the chapter (including the requirements for volume and maximum length of hot water piping) but may be found in the 2018 IECC. The IGCC title for Chapter 7 is now labeled “Energy Efficiency”. New requirements have been created for metering gas usage. Gas and district services greater than 1,000,000 BTUs and process and plug process greater than 250,000 BTUs will require measurement devices with remote communication capability. Chapter 7 requires compliance with ANSI/ASHRAE/IESNA 90.1, section 7, service water heating. This includes equipment efficiency, insulation, recirculation, and controls.

Maryland’s local AHJs have until March 25th, 2020 to enact the 2018 IECC. The local AHJs may adopt and amend the IGCC at their discretion. Plumbing designers and engineers will need to stay up to date with the Code processes and standards development.

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Karen Schulte, PE, CPD, LEED AP BD+C
WOA Liaison

WOA Report

As 2019 draws to a close and we think back upon the year, I'd like to thank those who participated and supported Baltimore's Women of ASPE. I know every day when I see the lovely purple-hued floral arrangement painting hanging on my wall I think fondly of the time spent with the women of Baltimore's Plumbing industry. If you're thinking that your walls are getting full and may not have room for another painting, we'll be branching out from the paint nights for a new event in the new year. Stay tuned in 2020 for the details and date of the next Baltimore WOA event!

Best Regards,
Karen Schulte, PE, CPD, LEED AP BD&C

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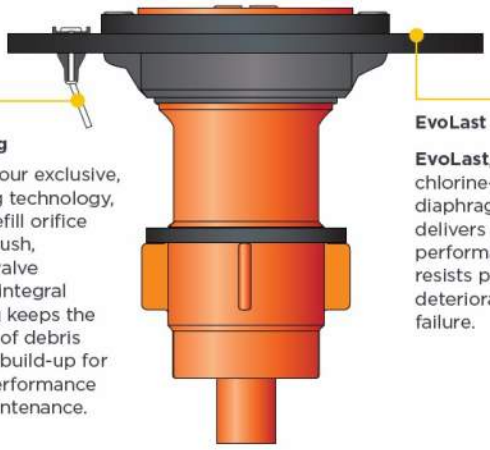

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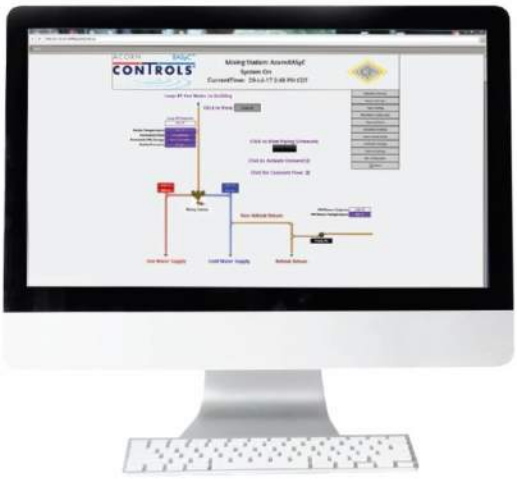

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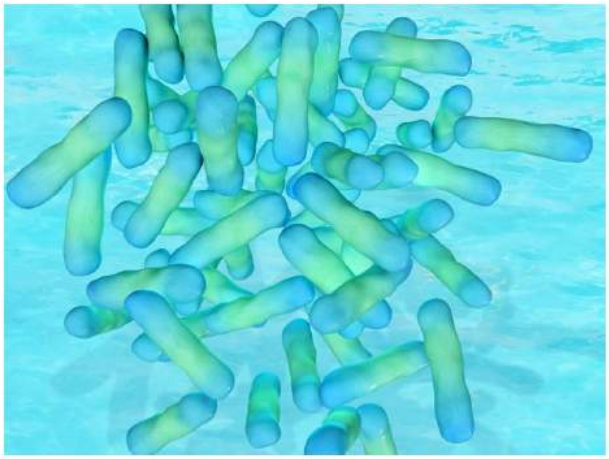
Preventing Waterborne Contamination in Building Water Distribution Systems

January 5, 2019

Fredrick Ongeche



An important advantage that developed countries have is good infrastructure — a reliable electrical grid, decent transportation network and properly maintained water and sewer systems. Imagine your doctor having to wake up at 5 a.m. to look for firewood and water before going to his or her practice. How good could that doctor be?

Unfortunately, over the years investment in these crucial infrastructures has woefully declined to the detriment of many communities, particularly in rural and less affluent areas. Many communities no longer have the finances to maintain their dilapidated water and sewer systems, thereby exposing and subjecting residents to incessantly lower-quality water and service.

Building owners and operators must provide a safe and healthy environment for users and occupants. That duty surely extends to the quality and safety of water within a buildings domestic water system. Recently, the quality of potable water, the plights of poor communities and the declining state of infrastructure have been brought to the forefront by events such as the Flint, Mich., water crisis and numerous outbreaks of Legionellosis.

Such an unfortunate crisis can provide important lessons pertinent to water distribution systems in buildings: Water distribution systems are susceptible to chemical and microbial contaminants; Water distribution systems in buildings can act to amplify and disseminate waterborne microbes and chemical contaminants; The quality of potable water entering a building is not always as it should be and, therefore, should not be taken for granted; There is an urgent need for better plumbing design to at least ameliorate and at best prevent the occurrence of contaminants within potable water systems in buildings; and Some building occupants/users are more susceptible to contaminants than others; therefore, the water system should be designed to protect the most vulnerable.

Of late, plumbing design has mostly focused on reducing cost and increasing water efficiency, sometimes at the expense of safety associated with potable water. Many times, systems and equipment made to safeguard the quality of potable have been value-engineered out of a project to save money.

In some cases, implementation of low-flow equipment has increased the residence time of potable water or outright stagnation. These, in turn, has resulted in degradation of the quality of

This article originally appeared in Plumbing Engineer, a TMB Publishing publication. For more articles like this, please visit www.phcppros.com.

potable water. Some studies have linked low-flow faucets and rubber materials found within them with increased colonization of Legionella bacteria.

To ensure the health and safety of occupants and users, proper design, installation and operation of a potable water system are paramount. The following points can help safeguard domestic water distribution systems.

Prevent contaminants from entering the potable water system

Contaminants can be introduced in the potable water system during construction — with incoming potable water or during equipment servicing. During construction, potable water pipe should be kept clean and stored in a segregated, secure location away from construction dirt and debris. Before installation, the pipe segments should be inspected for cleanliness and blasted with air to remove any loose dirt.

After installation, the piping system should be disinfected in accordance with protocols outlined by the authority having jurisdiction. Based on my experience, disinfecting potable water piping is best done by an independent, experienced water treatment professional as part of building commissioning, as opposed to the mechanical contractor.

The first line of defense for protecting the potable water system from possible contaminants in the incoming water is to install a filtration skid on the incoming water line.

Skid components should include an appropriately sized particulate filter (preferably 20 -50 microns) to remove suspended solids. The particulate filter should have a differential pressure gauge or other means to monitor and indicate when the filter media needs to be backwashed or replaced. Cartridge or bag filters with replaceable cartridges/bags are better-suited for potable water because mixing of clean and dirty water can be avoided entirely. Also, backwashing filters require the wastewater line to drain, thereby risking wastewater backflow and or reverse colonization due to backsplash.

Components should also include a chemical filter such as a carbon block/activated carbon media may be used to remove organic and heavy-metal contaminants from incoming water. In addition, a microbial disinfectant/sanitizer such as ultraviolet light or ozone to prevent waterborne germs should be included— including chlorine-resistant Giardia and Cryptosporidium — from entering the potable water.

Prevent proliferation of contaminants within building water systems The second line of defense is to provide systemic water treatment to prevent the proliferation of contaminants in the building water system. Systemic water treatment processes that can provide measurable residual treatment include, but are not limited to, chlorination, chloramination, chlorine dioxide or copper-silver ionization.

Water recirculation circuits such as hot water loops that are vulnerable to the occurrence of Legionella bacteria warrant extra attention. Protection can be improved when a systemic water treatment is coupled with a particulate filter installed on a recirculating loop. The filter will act to remove suspended solids continuously, thereby reducing demand for disinfectant.

Different treatment options offer unique advantages and disadvantages. The best protection is attained when two systemic water treatment options are used alternatively or concurrently. However, their compatibility must be considered.

This article originally appeared in Plumbing Engineer, a TMB Publishing publication. For more articles like this, please visit www.phcppros.com.

Design with cleanliness in mind

Our views and designs of water distribution systems in buildings are antiquated. Piping systems are designed inaccessibly — out of sight, out of mind. If you keep using the same cup to drink clean water, at some point, you will be drinking dirty water.

Water is the primordial home of life and no matter how clean it is at the beginning, without periodic "shock treatment," its conveyance system will be contaminated. Buildings and different sections of buildings should be designed with dedicated bypass/recirculation/disinfection loops. This will allow the piping system of a building section to be isolated and disinfected more easily and regularly, not just when there is an occurrence of an outbreak.

The right choice of piping material and components

Piping material and components have an important and direct impact on the quality of potable water. Some piping materials are more susceptible to microbial biofilm colonization than others. Piping material may also limit the kind and amount of residual disinfectant that can be used. Carbon steel pipe and components should be eschewed in potable water systems because they are highly prone to corrosion and oxidation by residual disinfectants.

By now it should be blindingly obvious that no components containing any amount of lead should be permitted in potable water. Extra precautions should be taken, especially when potable water is being supplied for nonpotable water uses such as cooling tower makeup, greywater tanks, water features and irrigation systems. Regular inspection of backflow preventers and anti-siphon apparatus ensures they are still functioning as required.

Seek advice from water treatment experts and qualified technicians Mechanical contractors and even current water treatment personnel may not be qualified to deal with potable water. Water in a nonresidential building is considered more or less public. If this water will be treated for use by the public, perhaps the building operator needs to be a certified public water operator.

At times, issues about potable water are serious and sometimes are a matter of life or death. A plumbing designer should not be hesitant to seek outside help, especially when working on projects involving health facilities such as hospitals and elderly-care homes where the primary population is more predisposed to potable water contaminants.

Implement hygienic operating protocols at the earliest opportunity Operating potable water systems to effectively maintain safety and hygiene require more than standard operating procedures and equipment manuals.

For instance, if filters will be used to filter municipal water at the point of entry, will the operator be required to disinfect filter media, vessel or other equipment/tools associated with potable water system before, during and after every servicing? How will this be carried out? Will replacement filter cartridges be required to meet NSF 61 standards or cheaper, noncompliant ones be allowed because of budget constraints?

Institute continuous water quality surveillance

Water distribution systems are important disseminators of waterborne contaminants — biological and chemical. Moreover, water infrastructure has been subject to hacking by nefarious states. Continuous surveillance of building water distribution systems can serve an early warning in detecting such activities and safeguarding the health and safety of users.

This article originally appeared in Plumbing Engineer, a TMB Publishing publication. For more articles like this, please visit www.phcppros.com.

Continuous surveillance encompasses:

• Monitoring water quality and quantity from entry to exit of the building — pH, disinfectant level, hardness, TSS, pressure, temperature, flow rate and daily consumption, among others.

• Monitoring the quality of processed water for various uses within the building.

• Keeping in constant communication with water-source owners and operators in municipalities.

• Awareness of what is happening in and around the building that can adversely affect water quality — such as nearby construction activities, flooding and fires — and reacting to them in a timely and effective manner.

• Having a response plan in case of an event, such as a boil water notice, microbial contamination or cross-contamination among other incidences.

An incident with a client revealed other advantages of continuous surveillance. A water treatment system served by potable water was faulting out due to high-temperature alarms. The faults almost exclusively occurred when the building was unoccupied — at night and over the weekends. When the building operator reset the equipment, no faults occurred throughout the day.

A major source of the alarm was an incidental high temperature of influent potable water — above 80 F and occasionally above 96 F, whereas at the faucets, the water temperature was consistently around 56 F. Replacement of temperature sensors in the equipment did not solve the problem and the client was frustrated. Theories and speculations abound to explain the faults, including the existence of ghosts. A team member even jokingly suggested getting a priest for an exorcism.

Before embarking on removing the insulation and cutting into the influent water line to install a continuous temperature monitor, the operator decided to trace influent water supply all the way to the take-off point in the mechanical room. To his surprise, the potable water line to an electronic mixing valve was warm to the touch. Further investigation revealed a hot water check valve was malfunctioning and letting hot water backflow into the cold-water supply line.

But this malfunction only happened when potable water flow was very low, which coincided perfectly with low building occupancy. Were it not for the high-temperature alarms on the water treatment equipment, this malfunction would have never been detected, perhaps until the conditions would have been worse. Warm temperatures between 77 F and 108 F in the potable water system promotes the growth of Legionella bacteria; therefore, it is important to keep cold water cold and hot water hot.

The current state of our water infrastructure has revealed many vulnerabilities in potable water systems in buildings. To ensure the health and safety of occupants and users, proper design, installation and operation of a potable water system are paramount.

Plumbing designers can play an important role in ameliorating or preventing the occurrence of waterborne microbe and chemical contaminants in building water distribution systems.

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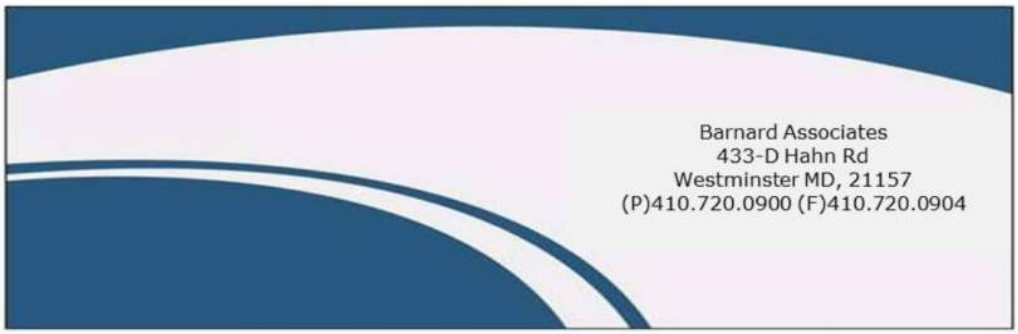

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2019-2020 ASPE Baltimore Chapter Meeting Schedule

Date: **September 25, 2019**
Speaker: WSSC
Topic: Cross Contamination Control

Date: **October 23, 2019**
Speaker: Generac
Topic: Natural Gas Sizing for Emergency Generators

Date: **November 20, 2019**
Speaker: Viega
Topic: Opportunistic Pathogens 101

Date: **December 13, 2019**
Event: Holiday Party
Location: Mustang Alley's

Date: **January 22, 2020**
Speaker: McShane PC
Topic: Professional Ethics in Engineering

Date: **February 26, 2020**
Speaker: Professor Kenneth Isman—UMCP
Topic: Importance of Fire Protection Hydraulic Calcs

Date: **March 25, 2020**
Speaker: PVI
Topic: Water Heater Sizing, Construction, and Efficiency

Date: **April 22, 2020**
Speaker: Charlotte Pipe
Topic: Cast Iron Pipe

Date: **April 24, 2020**
Event: Golf Outing
Location: The Timbers at Troy

Date: **May 27, 2020**
Speaker: Watts
Topic: Automatic Control and Pressure Reducing Valves

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Monthly Sponsorship Opportunities

The Baltimore Chapter of ASPE continues to have successful meetings and is looking to continue improving throughout the year.

The Chapter has the following sponsorship opportunities for each month:

Tabletop Presentations: $100 to provide a tabletop presentation of equipment or material relative to the plumbing profession. The tabletops will be set up from the beginning to the end of the monthly meeting and provides the opportunity to provide a brief (under 5 minutes) presentation.

Please make checks payable to the Baltimore Chapter of ASPE.
Contact Jeff Edwards or Kathy Dwyer if interested
jedwards@muellerassoc.com
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