ASPE
American Society of Plumbing Engineers™
BALTIMORE

Monthly Newsletter **APRIL 2019**

Upcoming Meeting

Date: **April 24, 2019**

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

Place: Olive Grove Restaurant

Topic: **Ultra Pure Water Systems**

Speaker: **Lee Heikkinen—NEU-ION**

Meeting Format
6-6:30 Social
6:30-6:45 Announcements and Table Tops
6:45 Dinner Served
7:00-8:00 Speaker

MEETING LOCATION

Olive Grove Restaurant & Lounge

705 North Hammonds Ferry Road
Linthicum, Maryland 21090
Phone: 410.636.1385

ASPE
CHAPTER AWARD OF MERIT
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In This Issue

WWW.BALTIMOREASPE.COM

2019 ASPE BALTIMORE CHAPTER
GOLF OUTING and COOKOUT

Friday, April 26, 2019
The Timbers at Troy
Columbia, Maryland
$125 / Golfer

- Prizes for Team Play
- Door Prizes
- Longest Drive Prizes
- Closest to the Pin Prizes

SCHEDULE

7:30 AM	Registration/Check-In/Breakfast		
8:30 AM	Shotgun Start Scramble Format "Captain's Choice" Mulligans Available	1:30 PM	Cookout (Hamburgers, Hot Dogs, etc.)
		2:00 PM	Awards & Prizes

Sponsors and Participants, please contact:
David K. Goodell
dgoodell@jamesposey.com
James Posey Associates
11155 Red Run Boulevard
Baltimore, MD 21117
Phone: (410) 265-6100
Fax: (410) 298-9820

Make checks payable to ASPE Baltimore Chapter.
Reservations will be confirmed when check and participant information is received.
PLEASE RETURN COMPLETED FORMS BY APRIL 12, 2019.

Company_____

Name_____ Phone No._____

No. of Golfers _____@ $125 each Total for Golfers: $_____

Sponsorship Level: _____ Total Sponsorship: $_____

Refer to attached sheet.

Total Amount: $_____

2019 ASPE Baltimore Chapter Golf Outing
Sponsorship Levels

○ **Tee Marker (with Foursome)**	**$125.00**
○ **Tee Marker (without Foursome)**	**$150.00**
○ **Drink Cart Sponsorship** (Includes tee maker and cart sign)	**$600.00**
○ **Cookout Sponsorship** (Includes tee maker and cookout sign)	**$600.00**
○ **Cart Sponsorship** (Includes tee maker and cart signs for each cart)	**$600.00**

All proceeds from the Golf Outing will benefit future Chapter events and activities.

Please make checks payable to: **ASPE Baltimore Chapter**

Mail registration and payment to:

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Attn: David K. Goodell
11155 Red Run Boulevard
Baltimore, Maryland, 21117

Jeffrey W. Edwards, CPD ,GPD
President

President's Report

Last month's meeting had another large turnout with about 60 attendees. I hope we are able to continue this success for our final two meetings.

Our very experienced golf chairman, Dave Goodell, wants me to remind everyone that our chapter's annual golf outing is being held on Friday, April 26th at the Timbers of Troy golf course. We have a few spots left for sponsors and players so please make plans to join us and have some fun, food, and drinks.

Last month we passed out twenty-year membership tenure awards to our eligible members. This month we will be passing out thirty and forty year tenure membership awards. There are twelve members eligible for the thirty year tenure award and four members eligible for the forty year tenure award. I really hope these members will be able to join us for this special night. Please plan on attending this month's meeting to be a part of this event.

The Baltimore ASPE chapter is very honored to be able to award our long term members as they should be. The Baltimore ASPE chapter is part of ASPE's Region 1, that includes sixteen other ASPE chapters from Virginia to Quebec and Montreal, Canada. The Baltimore chapter is the only chapter in Region 1 passing out tenure awards to their members. I hope by our member recognition, more people will consider becoming a member of our proud ASPE chapter.

If you want to speak with me regarding our chapter, technical presentations, newsletter or anything else regarding our chapter, please feel free to contact me.

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

ASPE Baltimore welcomes you to follow our page on LinkedIn and Facebook!

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

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

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Jason J Eagles
VP Affiliate, Scholarship Chair, Newsletter

Dedication is defined as a solemn commitment of your time to a cherished purpose. It is a loyalty or allegiance to a cause. I cannot think of a better term that defines many of the members of the Baltimore Chapter of ASPE. Being a member of this society is a choice and often involves hours of time devoted to the local chapter. We certainly hope the Baltimore Chapter has supported your technical knowledge and allowed for networking opportunities with other plumbing professionals. Without the dedication of its members, we would not be as strong as we are today. Speaking on behalf of the board, we wish to thank and honor you for that dedication. This year we will be celebrating those with 10 Years or more of being an ASPE Member. This program is long overdue and I am proud to be a part of it. We will be handing out over 50 awards during the next several meetings. Anyone receiving an award is welcome to attend that meeting paid by the Chapter. Please spread the word and join us as we celebrate these milestones. Please see the following pages for the members being recognized.

Award Presentations

30 & 40 Year Award – April 24, 2019

See next page for those being honored

30 & 40 Year Awards – April 24, 2019

30 Year Awards

Charles E. Kozlowski
Roy D. Ebersole
Jeffrey W. Edwards
Michael A. Brame
Richard C. Goins
J. Thomas Federline Jr.
Jerry W. Rutkowski
Frederick Koelber
Daniel J. Gardner
Michael P. Nelson
Aaron L. Mullenax
David R. Hoffman

40 Year Awards

Donald F. Steiner
Stephen Hudson
John Richard Wagner
Robert J. Stryiewski

If you are receiving an award and attending this meeting, please RSVP on the website www.baltimoreaspe.com.. The Baltimore Chapter would like to cover this expense to further show our appreciation. Please RSVP for the meeting online and use the bypass payment option when prompted. You will need to click on Member Ticket $35 and follow the steps to payment where you can bypass payment.

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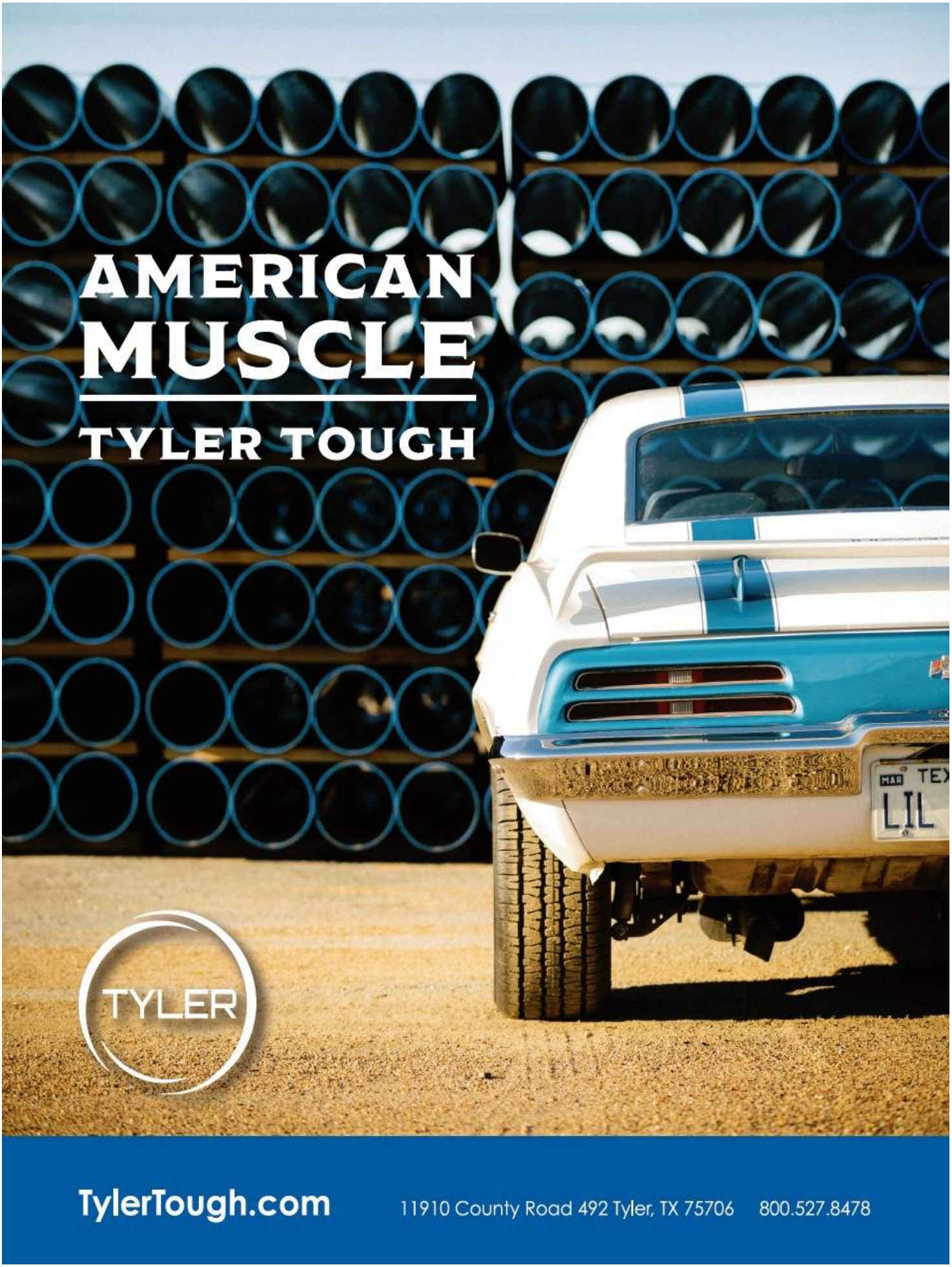
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- As a paid advertiser you will have your advertisement in the newsletter for either a full year (11 editions) or on a monthly bases.
- Manufacturer's Reps may run a full page advertisement for an upcoming seminars at the full page monthly cost.
- Ads for the year will begin in the September issue and run through the June issue
- Advertisements starting mid-year will be billed on a monthly basis.
- All ads must be paid in full prior to the advertisement being included in the newsletter.
- Advertiser must provide ads in high resolution, and must one of the following formats: PDF, TIFF, PNG, Bit-map, Windows Metafile.

•Cost per advertisement size is as follows:

Size	per Year	per Month
Full page	$750	$75
½ page	$500	$50
Bus. Card	$250	$25

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
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kdwyer@ejdwyer.com

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

Technical Report

Spring seems to have finally taken hold and the weather is warming up. Our March technical presentation seemed to have been well attended. Some of you may have recognized that some of our attendees were reviewers from Baltimore County, Anne Arundel County, and WSSC. Grease interceptors are an integral part of our sanitary system and I'd like to thank Chas Tevis for coming down from New Jersey to enlighten us on what to consider when a kitchen is part of our projects.

Our next seminar deals with removing impurities from water in a much different way. Lee Heikkinen from NEU-ION will be our presenter for the April meeting and he will discuss the components and implementation of Ultra Pure Water Systems. There are many different purposes for purified water that Hospitals, Laboratories, and Industrial applications require, and each use has its own water quality classification that needs to be followed. Lee will walk us through how each component contributes to achieving these classifications.

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Technical Manager-Mid Atlantic Region

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

WOA Event April 2019

From blank canvases to beautiful flower vases, the women of Aspe enjoyed an evening of painting and networking. Special thanks to Delta and Barger Associates for making the night possible.

Contact Karen Schulte for more information on the Baltimore Chapter AYP and WOA at kschulte@muellerassoc.com

ASPE American Society of Plumbing Engineers BALTIMORE

Christopher Imhof, PE, CPD
Education Committee Chair

Commissioners' Engineering Scholarship Program

About the Scholarship

The Washington Suburban Sanitary Commission (WSSC) offers annual scholarships to college students majoring in engineering fields that are vital to the work of WSSC. Named in honor of former Commissioners Joyce Starks and Gene W. Counihan – the goal of the Commissioners' Engineering Scholarship Program is to provide financial assistance to students from WSSC's service district in furtherance of their engineering studies and to encourage applicants/winners to consider careers in the water, wastewater/water resource recovery industry; and preferably, at WSSC.

Up to two new scholarships in the amount of $1000 each may be awarded; one to a Prince George's County resident and one to a Montgomery County resident. Winners are eligible for additional awards of $1000 each year for up to four consecutive years as long as residency and grade point average (GPA) requirements are met. Winners also receive priority consideration for paid summer internship opportunities at WSSC.

Eligibility

To qualify, students must:

provide proof of permanent residency in WSSC's service district;

be enrolled full-time in a degree program at an accredited college or university that leads to an engineering degree in one of the following areas: Civil Engineering (i.e., Environmental, Sanitary, Structural, Geotechnical, Water Resources, Fire Protection, Transportation, Project Management, Construction Management); Electrical Engineering; Material Science and Engineering; Chemical Engineering; Mechanical Engineering or Computer Science/Engineering. High school seniors who have been accepted into such a program are eligible; proof of acceptance/enrollment must accompany application materials; and,

complete an application and have it received by the WSSC Corporate Secretary by **Monday, June 3, 2019**.

2019 Application Process

Students are required to submit a written essay (see topic below), along with the following application materials:

Video Introduction/Infomercial. *Tell us, who you are; why you're the best candidate for the scholarship; and, why tap is better than bottled. Video should be no longer than five minutes;*

Official Transcript;

Proof of Permanent Residency in WSSC Service District. *Acceptable forms of documentation: Copy of driver's license, voter registration card or other government-issued ID, reflecting your permanent residency in either Prince George's or Montgomery County, Maryland; and,*

Two Reference Letters.

2019 Essay Topic:

"As the largest water utility in Maryland, and one of the largest in the country, WSSC is proud to produce and deliver safe, clean and reliable tap water to our 1.8 million customers daily. We are passionate about our water and even prouder of our superior track record in delivering this excellent product to our bi-County residents for the past 100 years. In 1,500 words or less, tell us why tap water is better than bottled water. Please be sure to address all relevant factors and scenarios in making your case."

Submission Deadline: Monday, June 3, 2019.

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Water Purification

This article summarizes the main methods of water purification and the major classifications of water quality.

The term "water purification" has a variety of meanings that depend on the industry and application involved. This article will summarize the main methods of water purification and the major classifications of water quality. To properly design a water purification system, you should start with the end in mind, which would be an industry standard, a manufacturer's recommendation or simply a client's desire for level of purity. Let's start with the health care industry, which has the most basic water purification requirements.

Hospitals

Hospitals need water that has been treated and/or purified for purposes such as sterile processing of surgical instruments, hemodialysis centers and for laboratory work. Water hardness is an important factor when considering the cleaning, disinfecting and sterilization of surgical instruments. In extreme cases, the formation of calcium carbonate crystals could trap bacterial spores, allowing them to survive the sterilization cycle. In rare circumstances, the local water supply is sufficient so that no treatment is required to meet these process needs. In other instances, *water softening* is required to reduce the water hardness to the desired level, which is usually 1 to 2 ppm total hardness. Hardness is the measure of the total calcium, magnesium, iron and other metallic elements in the water. Water softening is usually accomplished by passing the raw water over a bed of granular sodium cation-exchange resin. This process removes these dissolved impurities that cause hardness by replacing them with sodium ions.

Many manufacturers of sterilization equipment prefer that the final rinsing of surgical instruments be done with *reverse osmosis* water. Reverse osmosis (RO) is a water purification process in which water is forced by pressure through a semi-permeable membrane. In normal osmosis, water flows from a less concentrated solution through a semi-permeable membrane to a more concentrated solution. Reverse osmosis uses pressure to reverse normal osmotic flow (see Figure 1). Water flows from a more concentrated solution through a semi-permeable membrane to a less concentrated solution. The feedwater to the reverse osmosis system flows over the surface of the membrane, and a percentage of the water is forced through by pressure and becomes the purified water or *permeate*. The remaining water, *concentrate*, retains the rejected contaminants and is drained off. The percentage of feedwater that is recovered as permeate, called percent recovery, is typically 33% or 50%. The other 66% or 50% is discharged to drain. For optimum operation of the RO equipment, the feedwater should be heated to approximately 77

Water Purification

Laboratories

Water quality for laboratory work varies widely depending upon the application involved. For instance, traces of organics and heavy metals are not tolerable in high-pressure liquid chromatography or in atomic absorption spectrophotometry. The laboratory will typically require what is termed high-purity water, or *laboratory-grade* water. This water will be virtually free of one class of contaminant, but may contain large amounts of other types of contaminants. The methods of reverse osmosis discussed above, *deionization* and *distillation*are all capable of producing laboratory-grade water. Deionized or DI water is purified by passing water through ion exchange resins that remove dissolved ionized chemicals. Deionization does not remove organic chemicals, bacteria and other microorganisms. Colonies of microorganisms can become established and proliferate on the nutrient-rich surfaces of the resin if not regularly sanitized or regenerated. Distillation will remove a wide range of contaminants through the boiling of feedwater and collecting the resulting condensate. This process is more energy intensive and is consequently more expensive to operate than the more common technique of reverse osmosis. Scale formation can also be a problem with distillation units.

The National Committee for Clinical Laboratory Standards (NCCLS), among others, has developed standards for water-used laboratories. Type I, or *reagent-grade* water differs from laboratory-grade water in that it is free from all classes of contaminants. It is sometimes referred to as *ultrapure* water, as it contains very low amounts of chemical impurities and has a very low electrical resistance. The purity of ultrapure water is about 100 or more times greater than RO water. Type II, or *analytical-grade* water, may be used for all but the most critical laboratory procedures. Type III, or *general laboratory-grade* water, is used in many quantitative analysis procedures, as well as glassware rinsing and as feedwater, for generating reagent-grade water by purifying it further with distillation or deionization. A typical application will involve a large scale RO system to generate the laboratory-grade water used throughout the facility, and then employ small, point-of-use polishing to create the reagent-grade water where it is required. The polishing usually consists of activated carbon mixed-bed deionization, followed by sub-micron membrane filtration.

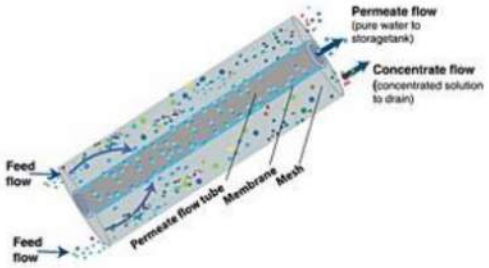

Figure 1. In reverse osmosis, water flows from a more concentrated solution through a semi-permeable membrane to a less concentrated solution.

Water Purification

Industrial Applications

Technology sectors such as pharmaceutical and semiconductor industries require large quantities of ultrapure water such that point-of-use generation is not practical. In these applications, a large central system is required that typically involves recirculation loops and storage tanks. The United States Pharmacopeia (USP) defines several types of water, of which *purified water* (PW) and *water for injection* (WFI) are most common. The standards for these waters are very similar, except that WFI has a stricter bacterial count and must pass a bacterial endotoxin test. An endotoxin is a heat-resistant substance that is found in the cell walls of both viable and nonviable bacteria. Production methods for these two types of waters are also similar; however, WFI must utilize double-pass reverse osmosis or distillation. Ultrapure water is also used in the semiconductor industry to remove the residual etching acids from the surface of wafers during processing.

The USP standards require that *pure water* be prepared with water complying with regulations of the U.S. Environmental Protection Agency (EPA) with respect to drinking water, which specify limits on coliform bacteria. This feedwater should be sampled periodically over each season of the year to measure both the microbial count and the residual disinfectant level to establish a baseline. Typical municipal water contains an adequate amount of free chlorine to limit microbial growth to satisfy EPA requirements.

Pretreatment of the feedwater usually involves a first step of filtration with a multi-media filter consisting of gravel, greensand and anthracite, which when combined can effectively remove solids as small as 5 to 10 microns. Water entering an RO system should be further filtered down to at least 5 microns to prevent clogging of the feed channel. Next, water softening is employed using ion exchange softening to protect the downstream RO system from developing scale on membrane surfaces. After softening, chlorine may be removed by either activated carbon beds or bisulfite injection. Activated carbon is more costly, and it also provides a breeding ground for bacteria. If activated carbon is used, the filter assembly is typically designed to be heat sanitized on a regular basis with either steam or hot water. Another technique employed to retard microbial growth in carbon filters is to incorporate ultraviolet (UV) light, either in a constant recirculation loop around the bed or by installing UV assemblies both up and down stream of the activated carbon.

After dechlorination, the water will often proceed to a double-pass RO, which provides an extra level of microbial reduction. As mentioned previously, the preparation of WFI requires either double-pass RO or distillation. Distillation equipment is expensive to operate due to the energy required to vaporize water. Additionally, a single-pass RO system is often employed upstream of the still to reduce the potential of scaling and fouling of the still. In the double-pass system, the product water from the first pass is used as feedwater for the second pass. Even when sanitized on a regular basis, some microbial growth will occur on the product side of the membrane. Of all the contaminants in the water supply, bacteria are the hardest to control and can live in purified water, which contains very few nutrients. The bacteria can go into a low-nutrient mode where they reduce in size and bond to the internal surfaces of pure water systems. Bacteria will attach to any surface that water contacts and develop what is termed a "biofilm."

Because of this, the pure water distribution system must be designed with features and components that work to control microbial growth. Bacteria will tend to grow in places such as threaded connections, ball valves, dead-leg piping and imperfections in pipe materials, such as extruded polyvinylchloride. So, the use of diaphragm valves, welded joints and stainless-steel piping is very common. Gauges and instruments should be specified in sanitary design. The periodic use of either heat or chemical sterilization also has an impact on the selection of piping materials. Close attention should be paid to the elimination of stagnant sections of pipe as small as three to four pipe diameters, as sanitizing agents cannot reach these areas, allowing bacteria to grow unchecked.

Continuous deionization (CDI), or electrodeionization (EDI), is a continuous water purification process that uses direct current, permeable membranes and a mixed-bed ion exchange resin. This technique is often used in conjunction with RO to provide water that is consistently low in bacteria. CDI equipment is sensitive to feedwater impurities and is therefore used downstream of the RO equipment for polishing purposes. It should be noted that CDI membranes and resins are incompatible with most sanitizing agents.

A storage and distribution system is employed to keep the water moving in order to discourage microbial growth. Two common options for controlling bacterial growth in the recirculation system are heat and ozonation. The use of ozone is attractive because of its relatively low capital cost compared with the equipment that would be used to heat and subsequently cool the water. Ozone also works to reduce the total organic carbon (TOC) below USP standards. The ozone can be removed by UV light, which changes the O_3 to O_2.

Conclusion

Water purification systems are a critical part of many industrial processes, as well as important to the operation of a number of laboratory and health care facilities. The selection of the water purification system and piping materials as well the design and layout of the distribution system are of the utmost importance. Consequently, all aspects of the plumbing system design need to be researched in detail to result in a successful project.

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ASPE
American Society of Plumbing Engineers™
BALTIMORE

Andrew Cahill — Membership

Membership Report

First quarter in the books. Anyone else feel like time is moving faster this year? It's hard to believe we are looking at only 2 more meetings and the "David Goodell Invitational" before we break until the fall. Keeping my fingers crossed for an outstanding weather day on the 26th for the tourney.

No new members to report in April.

Please let me know if I can be of assistance to anyone interested in joining ASPE. You can direct them to https://www.aspe.org/join or email me at andrew.cahill@uponor.com.

Did you know that engineering firms may offer reimbursement to employees for affiliation with professional organizations such as ASPE? In fact, participation with local chapters is often encouraged and provides significant benefits. In addition to the ability to attain CEUs from monthly educational seminars and networking opportunities with other industry professionals, members are provided with a volume of the Plumbing Engineering Design Handbook for each year of participation – a key resource in completing CPD testing. Have a conversation with your firm's principal about your options for joining ASPE.

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J. Richard Wagner, PE
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Legislative Report

Latest on Ponding by Roof Drains

ASME A112.6.4 for roof drains is still in the review process for requiring that roof drains be flow tested for GPMs and their required hydraulic heads. It has been over a year that the standard has been being processed for these changes. In the meantime, the International Building Code (IBC) requires that the rain load (R) on the roof structure be based on the maximum ponding by the maximum allowable hydraulic heads of the primary and secondary roof drains. But there has been no requirement that roof drains be tested for their hydraulic heads until it was proposed to be added to ASME A112.6.4.

The designers of roof drainage systems have not been able to comply with the requirements of the IBC for roof rain loads (R) because tested roof drains were not available, but that is changing. Since the changes were proposed to ASME A112.6.4 over a year ago, some manufacturers of roof drains have been reported to have had their roof drains tested for GPMs and required hydraulic heads. If enough tested roof drains are available, the IBC requirements can be complied with now.

I suggest that the roof drainage system designers check with the manufacturers of the roof drains that they specify to see if they have been flow tested for GPM and hydraulic head. If so, check with the architect or structural engineer for the project for the rain load (R) that is being used. If this information is available, the roof drains on the design plans can be indicated with their required GPM and maximum allowable hydraulic head.

In the IBC, the rain load R = 5.2(ds + dh) in lbs/sf . The static head “ds” is the depth of water in inches up to the inlet of the secondary roof drains if the primary drainage system is blocked or overloaded. The hydraulic head “dh” in inches is the depth of water above the inlet of the secondary drainage system at its design flow.

The rain load R is not a separate load in the sixteen (16) IBC basic load combinations that must be resisted by the roof. The rain load R is compared to the snow load S and a roof live load Lr of 20 lbs/sf or less. The highest lbs/sf in either (Lr or S or R) i s used in the five (5) IBC load combinations that include (Lr or S or R) as a factor.

The proposed changes to ASME A112.6.4 are not expected to require that all roof drains be flow tested in accordance with its procedures. Since the initial Storm Drainage System Research Project by ASPE and IAPMO in 2012, some roof drains have been tested in accordance with ASPE/IAPMO/ANSI Z1034 – 2015 Test Method for Evaluating Roof Drain Performance. ANSI Z1034 uses vertical discharge piping which can have slightly higher GPM flow rates than ASME A112.6.4 which may not require discharge piping for flow testing.

If flow-tested roof drains are presently available, the requirements in IBC Section 1611 for establishing the rain loads (R) can be complied with. The publishing of ASME A112.6.4 – 2019 and its update in the local plumbing codes will not be required to comply with IBC Section 1611.

There may be a legal issue with installing ANSI Z1034 tested roof drains with horizontal drain piping. They are tested with vertical and offset vertical drain piping. ASME A112.6.4 is expected to require testing with no discharge piping so that its performance is less affected by its installation. A possible solution to the ANSI Z1034 flow test data may be to reduce the maximum GPMs used for the application of the roof drains to account for the effect of the vertical test piping.

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2018-2019 ASPE Baltimore Chapter Meeting Schedule

Date: **September 26, 2018**
Speaker: Craig Boyce - Kemper
Topic: Legionella, ASHRAE 188, and Minimizing Risk

Date: **October 24, 2018**
Speaker: Chris Imhof - WSSC
Topic: WSSC 2016 Code Update

Date: **November 28, 2018**
Speaker: Jesse Rodriguez -Aqua Treatment Services
Topic: Rainwater Harvesting for Potable Reuse

Date: **December 12, 2018**
Event: Holiday Party
Location: Mustang Alley's

Date: **January 23, 2019**
Speaker: STH
Topic: Fire Pump Controller Applications

Date: **February 27, 2019**
Speaker: Sherman Engineering Company
Topic: Lab Specialty Gas Sources and Distribution

Date: **March 27, 2019**
Speaker: Highland Tank
Topic: Grease Interceptor Design

Date: **April 24, 2019**
Speaker: Ultra Pure Water Systems
Topic: Lee Heikkinen—NEU-ION

Date: **April 26, 2019**
Event: Golf Outing
Location: The Timbers at Troy

Date: **May 22, 2019**
Speaker: EJ Dwyer
Topic: Digital Mixing Valves

ASPE American Society of Plumbing Engineers™
BALTIMORE

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
kdwyer@ejdwyer.com

MEETING LOCATION

Olive Grove Restaurant & Lounge

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