



# Chicago ASPENews



Chicago Regional Chapter of the American Society of Plumbing Engineers  
Vol. 44, No. 10  
May, 2013



## Chicago Chapter General Meeting Thursday May 16, 2013

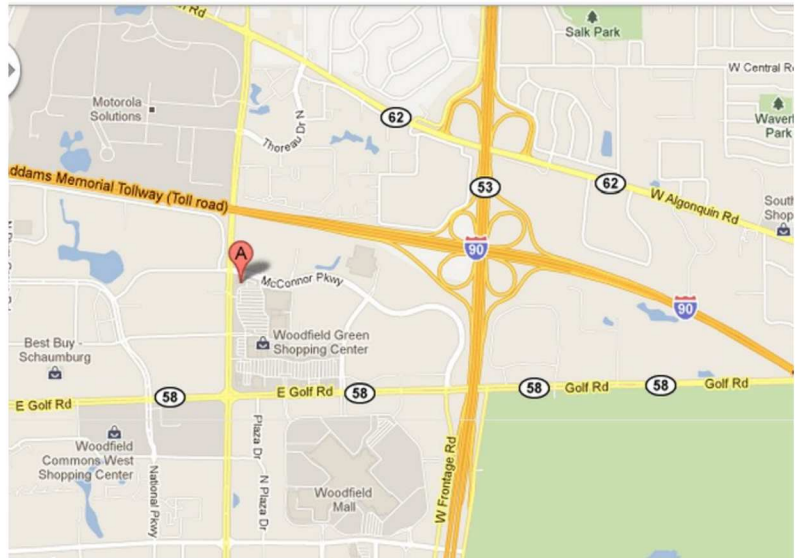


### Westwood Tavern & Tap

1385 N. Meacham Road  
Schaumburg, IL 60173

Plenty of free parking!

**It's Election Night!**



### AGENDA

5:30pm Primer/Cocktail Hour,  
Sponsored by: Siemens  
Water Technologies



6:00-6:30pm  
ASPE Chicago Chapter Board of Directors Elections

6:45pm Dinner, (\$35 ASPE Members with RSVP/  
\$40 Non-Members and Walk-ins)

7:45pm Presentation – “High Purity Water Systems and  
Healthcare Designers Guidelines”  
Presenters: **Dan Heilman and Richard Turkiewicz of  
Siemens**

**RSVP** as soon as possible to Rick Butler, VP Technical!

- ◇ Return the enclosed card for those of you getting this via US Mail
- ◇ Call: 224.238.8515
- ◇ Email: [Chicago.ASPE.RSVP@gmail.com](mailto:Chicago.ASPE.RSVP@gmail.com)

### MENU

Appetizers:

- Assortment of cheeses and vegetables

Dinner (Buffet Style):

- Salad
- Grilled Marinated Flank Steak
- Twice Baked Potato
- “ASPE-aragus”  
(grilled asparagus)

Dessert:

- Key lime pie

Drinks:

- Tea
- Coffee
- Soft Drinks

**Local Chapters are not authorized to speak for the Society**



## **PRESIDENT'S MESSAGE**

*"Nothing lasts forever; so live it up, drink it down, avoid the negativity, take chances and never regret because at one point it was what you wanted."*  
Unknown

We must enjoy good things in life, for they are temporary. One of the short experiences in life I enjoyed was the responsibility and pleasure of serving as your board president for the past two years. I would like to thank you so much for the opportunity to serve and for your vote of confidence.

### **ASPE Chicago Chapter Elections**

All Chicago Chapter members in good standing are eligible to run for a board position and all positions are open. If you would like to be entered in the ballot please contact me at [fxs@grummanbutkus.com](mailto:fxs@grummanbutkus.com) or 847.3165.9251 by **Friday May 10, 2013** and we will get your name on the ballot. Please refer to Joe Ficek, Election Chair, article elsewhere in this newsletter.

### **Symposium**

At the May meeting we will also discuss sending people to our Society's Symposium in the fall. Please mark your calendars,

**2013 ASPE Technical Symposium  
September 19-22, 2013  
Buena Vista Palace Hotel, inside the Disney World Resort.**

Please visit <http://aspe.org/2013tech> for more information.

If you are interested in receiving a free trip to the Symposium, please contact me at [fxs@grummanbutkus.com](mailto:fxs@grummanbutkus.com) or 847.3165.9251 by **Friday May 10, 2013, indicating why this will be beneficial to your career.**

### **ASPE Golf Outing—Date Updated!**

Our annual ASPE Chicago Golf Outing will take place on **Friday, June 14, 2013** at Hilldale Golf Club in Hoffman Estates. Please contact Steve Triphahn as soon as possible at [steve.triphahn@wtengineering.com](mailto:steve.triphahn@wtengineering.com) or 224 293.6333.

### **Save the Date for our Second Annual ASPE Chicago Chapter Family Picnic**

If you would like to assist with the planning, please contact John Nieman, CPD, PE at [JNieman@esdglobal.com](mailto:JNieman@esdglobal.com), 312 456 2323.

Saturday, August 10, 2013  
Schiller Woods, Groove # 12

### **CPD Review Class**

ASPE Chicago's CPD Review Class was held on Saturday April 6. We had 6 people and two instructors. Thanks to David DeBord for teaching the class and please let me know if you passed the test. Ahead of time, congratulations to all of our new CPD's!

**Would you like to advertise here? If so, please send an email to  
[ASPE.Chicago@gmail.com](mailto:ASPE.Chicago@gmail.com)**

...continued on next page...

## **CHAPTER OFFICERS**

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### **FACEBOOK**

[http://www.facebook.com/  
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[https://www.facebook.com/groups/  
ASPE.Chicago/](https://www.facebook.com/groups/ASPE.Chicago/)

### **LINKEDIN**

[www.linkedin.com/groups?  
home=&qid=2393408](http://www.linkedin.com/groups?home=&qid=2393408)

## **PRESIDENT'S MESSAGE CONTINUED...**

### **NEW! ASPE Young Engineers (AYE) - Chicago Event - June 13<sup>th</sup>, 2013**

Registration is now open for the Chicago AYE Networking Event. The event is open to ASPE members in the AYE category (35 and younger), as well as members in good standing of the Chicago Student Chapter. We encourage registration to get a rough head count. One free drink ticket will be provided, as well as light appetizers. Hope to see you there!

To RSVP please follow this link: <http://aspe.org/ayenetworking>

Please read along, we have great technical information, industry events, and informative legislative updates. I hope to see you all on May 16 at the Westwood Tavern & Tap in Schaumburg. Please RSVP to Rick Butler, VPT at [Chicago.ASPE.RSVP@gmail.com](mailto:Chicago.ASPE.RSVP@gmail.com) or visit our website at <http://chicago.aspe.org>

**Frank Sanchez, CPD; President**

[fxs@grummanbutkus.com](mailto:fxs@grummanbutkus.com); 847.316.9251

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## **ASPE CHICAGO CHAPTER 2013 ELECTIONS**

Spring has sprung (at least it will if ever gets warm and stops snowing) and old Mother Nature is changing things up. It is time for a change within ASPE Chicago as well. This month we will be holding elections to vote in our new ASPE Chicago Board of Directors. The Board of Governors, consisting of the last 3 ASPE Chicago Presidents, was convened to discuss current chapter officers as well as potential candidates for the upcoming term. Many things were taken into consideration in this process and we have assembled a list of both old board members and "new blood" for this year's ballot.

This year we will also be voting for someone to fill the new position of Vice President, Affiliate. In the past the Affiliate Liaison was appointed by the President and served on the Board but officially did not have voting rights when it came to decisions made by the Board. Our Affiliates are an integral part of our Chapter and deserve a voice as well as a vote in our Chapter. By creating this position we are addressing this issue. While we have always given the Affiliate Liaison a vote in the past, this makes it official.

This is your opportunity to vote for those who will represent the Chapter in the coming year so please consider whom you believe to be the best choice for ASPE Chicago. Be aware that this list can be modified right up until the actual voting takes place. If you wish to run for a position please contact me at [jficek@grummanbutkus.com](mailto:jficek@grummanbutkus.com). Nominations from the floor will also be taken from the floor at the time of the elections.

Here is the slate of candidates for this year's elections:

<b>President:</b>	Rick Butler
<b>Vice President Technical:</b>	Mark Mannarelli
<b>Vice President Education:</b>	Jill Dirksen
<b>Vice President Legislative:</b>	J. Francisco DeHoyos
<b>Vice President Membership:</b>	April Ricketts
<b>Vice President Affiliate:</b>	Tom Higgins IV Nevo Martelli Chris Wisinski
<b>Administrative Secretary:</b>	David Erickson Patrick O'Boyle
<b>Treasurer:</b>	Sean Allard
<b>Corresponding Secretary:</b>	Chris Sbarbaro

All of the candidates will be available to meet with you during cocktail hour before the meeting. Please take the opportunity to talk with them and get a feel for what they can do for you, the members. Remember you have to be in attendance to vote, and only one vote per person!

**Joe Ficek, CPD**

Election Committee Chairman



## **VICE PRESIDENT, TECHNICAL: TECHNICALLY SPEAKING**

### **April Meeting Recap:**

**Thank you** to all who attended our April dinner meeting. A double thank you to all that attended regardless of the rain and floods. We had limited attendance, although not a bad job considering what happened to our city!! Another big thank you to Jim Majerowicz and Local 130 for allowing us to have our meeting and presentation at the Union Hall Training Center. The presentation on lead free fixtures gave us the most current update on this situation. The bottom line is: get ready for the change.

Attendance from last month's meeting can be found elsewhere in this newsletter.

### **May Technical Meeting:**

We are going back to a fan favorite, Westwood Tavern & Tap in Schaumburg; let's make it the highest attended meeting of the year. It's election night for the board members too!! Don't forget to RSVP.

### **Technical Presentation: High Purity Water Systems and Healthcare Designers Guidelines' by Siemens Water Technology**

Items to be discussed:

- Description of Common Contaminants found in potable water (5 classifications) including nomenclature.
- Definition of conductivity vs. resistivity vs. total dissolved solids as means of measuring water purity.
- Water treatment standards (ASTM, USP, CLS, AAMI, etc.) and their application.
- Compare and contrast three primary water treatment technologies used to meet the above standards.
- Distillation (distilled water)
- Deionization (deionized water)
- Reverse Osmosis (RO water) – typical design and how RO membranes work.
- High purity water designs for health science industry (package systems)
- Point of use high purity water systems.

### **Presenters for this month's meeting:**

Richard Turkiewicz, from Hazel Park, MI

Richard has been in water treatment sales for 27 years with Siemens (formerly US Filter and Continental Water). Over this period of time, water and wastewater treatment solutions have been provided to multiple markets. They include general industry, steel, automotive, pharmaceutical, health science, institutions, and labs. Technologies include membrane filtration, ion exchange, media filters, clarifiers, biological treatment, and package precipitation systems.

Dan Heilman, from Broadview, IL

Dan has been in water treatment sales for 6 years with Siemens covering the Chicagoland and Central Illinois with a focus on new business development & Account Management. Over this period of time, his main market penetrations have been in health science, institutions, general industry, pharmaceutical, & laboratory.

### **Lastly:**

ASPE Chicago has a great heritage and a great following. We need your help to keep us growing strong, now and in the future. Keep this mind for our upcoming ASPE Chicago product show in September. We need **everyone** there; all our members, affiliates and engineers. It helps all of our professions more than you think.

Thank you always for being the Largest ASPE Chapter in the country. Let's keep it that way!

**Rick Butler,**

**Proud to be VP Technical of the Chicago Regional Chapter of ASPE**

[rbutler@lochinvar.com](mailto:rbutler@lochinvar.com); 224 238.8515



## **VICE PRESIDENT, LEGISLATIVE**

Hello again from your V.P Legislative,

First, I would like to congratulate the winner of the March contest: David Erickson with Symmons! He was the winner of a strip of raffle tickets into the monthly meeting 50/50 raffle drawing. Who will be this month's winner?

### **May Contest**

The May question is:

Who was the first president of ASPE and what chapter did he belong to?

Please send me your answers at to [mmannarelli@dbhms.com](mailto:mmannarelli@dbhms.com). The winner will receive a free strip of raffle tickets at the May meeting. Remember the May meeting is election time! Come once and vote often, it is the Chicago way!

### **Additional NFPA 13 Changes that will take effect in 2013**

#### Section 7.6:

Only listed antifreeze solutions can now be used, except in listed ESFR (early suppression fast response) sprinklers where propylene glycol is permitted. There are currently no listed antifreeze products on the market. NFPA 25 Inspection, testing and maintenance of water based systems, many existing antifreeze systems will require a risk analysis to remain in service (see <http://magazine.sfpe.org/>) for the latest on antifreeze sprinkler systems.

#### Section 9.1.1.3:

This will permit shared piping support to also support systems other than the sprinkler system if the supports are designed by an engineer.

#### Section 23.4.4.1.1.4 & 5:

How to hydraulically calculate small systems when they are less than the minimum required area (such as preaction systems for computer rooms and dry pipe or antifreeze systems for loading docks) is now addressed.

### **Water Infrastructure Finance and Innovation Act**

Today, now more than ever, municipalities and government (at Capitol Hill) are looking at the depleted infrastructure of our nation. The American Water Works Association-AWWA recently introduced a Water Infrastructure Finance and Innovation Act (WIFIA). Senator Jeff Merkley democrat from Oregon introduced a bill S.3626 into the senate.

### **Sustainability**

Sustainability is based on simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Please visit the Federal Government Sustainability website that gives the latest information for the latest practices and environmental programs. Sustainability is important to making sure that we will have the water, materials and resources to protect and better our environment.

- Involvement in sustainable initiatives predates the current trends, as the Uniform Codes have long included provisions for water-efficient plumbing products, gray water and reclaimed water systems, solar energy systems, and environmentally friendly refrigerants.
- The latest edition of the UPC permits the use of higher efficiency plumbing fixtures and fittings, such as dual flush and 1.28 gallon per flush toilets, urinals that flush at 1/2 gallon or less, and faucets and showerheads that use up to 30 percent less water than required by federal law.
- The UPC also allows for gray water to be used for irrigation purposes and reclaimed water for flushing water closets and urinals and supplying trap primers.
- The Uniform Mechanical Code permits the use of environmentally friendly refrigerants and relies upon ASHRAE 62.1 for proper indoor air quality requirements.
- The changes in the Uniform Plumbing Code, Uniform Mechanical Code and Uniform Solar Code will focus on achievable goals that reduce waste and conserve precious resources, while still enabling contractors to build affordable buildings with more efficient construction products and practices.

For more information go to: [http://www.iapmo.org/pages/iapmo\\_green.aspx](http://www.iapmo.org/pages/iapmo_green.aspx)

....continued on next page...

## VICE PRESIDENT, LEGISLATIVE CONTINUED...

### **City of Chicago and Sustainability**

The link below is a great way to see what Chicago is doing to help make the City more sustainable now and in the future. It has great articles, upcoming events etc.

<http://www.sustainable-chicago.com/>

### **2013 Code Changes**

I have supplied the site for the proposed amendments for the 2013 Part 890 Illinois Plumbing Code here:

<http://www.ipiassoc.org/wp-content/uploads/2013/04/Part-890-Plumbing-Code-Amendments-4-10-13.pdf>

The Illinois administrative code water and Sewage Part 905 Private Sewage Disposal code can be found here:

<http://www.ilga.gov/commission/jcar/admincode/077/07700905sections.html>

### **Healthcare Plumbing**

The link below is for the plumbing engineers who are designing healthcare facilities. The link is the green guide for health care. It has information for LEED guidelines as well as articles and case studies and upcoming events.

<http://www.gghc.org/>

A brief reminder that this year's product show will be held in September and not in April as it was in years past. We hope to see you there!

**Mark G. Mannarelli, Vice President, Legislative**

[mmannarelli@dbHMS.com](mailto:mmannarelli@dbHMS.com)

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## ASPE Chicago Golf Outing 2013

**\*New Date\***

**Friday June 14, 2013**

Hilldale Country Club  
Hoffman Estates, IL  
Tee-off 8:30 a.m.

Please note that due to an industry conflict, this year's golf outing will be held on **Friday June 14th, 2013** at Hilldale Country Club in Hoffman Estates.

- We will start with a "shot-gun" tee-off at 8:30 a.m.
- Cocktails (cash bar) will begin at 3:00 p.m. with buffet style dinner to follow at 4:00 p.m. as in years past
- Lunch is sponsored by **Metropolitan Industries** and will be served between the 9<sup>th</sup> and 10<sup>th</sup> holes
- Breakfast is sponsored by **Daugherty sales** and will be served from 7:30 a.m. – 8:30 a.m. in the snack shop
- Beverages will be served on the course throughout the day
- There will also be special displays and activities as you play the course.

You don't want to be left out! Reservation forms have been sent out. Promptly fill them out and email them back to me. If you have any suggestions of ideas to make this year's golf outing better, please email them to me.

We appreciate your support and look forward to another successful outing,

**Steve Triphahn, Golf Outing Chairman**

[Steve.Triphahn@wtengineering.com](mailto:Steve.Triphahn@wtengineering.com)

Phone: (224) 293-6309



## **ADMINISTRATIVE SECRETARY**

### **Elections Month is Here Again!**

I hope everybody's basement is dry by now. Thanks to the rains that flooded the Chicago metropolitan area all our local plumbers were extra busy. The wide spread floods also had an impact on our meeting; the attendance was close to half of our usual amount of participants. In consequence, the usual raffle did not take place, but this did not stop the rest of the program.

The monthly presentation was "Updates to Lead Free Components in Plumbing Systems", presented by K.C. Akalaonu from Moen Commercial. The meeting took place at the Local 130 journeymen Plumbers School. James M. Majerowicz, Instructor, provided a tour throughout the facility. After seeing how the piping systems are assembled, the only question that I had was, "How do we test the installation?" So, here is what the Chicago Plumbing code requires for testing a piping installation under the section "**18-29-312 Tests and Inspections**":

**18-29-312.1 Required tests.** Permit holders shall make applicable tests prescribed in Sections [18-29-312.2](#) through [18-29-312.9](#) to determine compliance with provisions of this chapter. A permit holder shall give reasonable advance notice to the building commissioner and the commissioner of water management when plumbing work is ready for tests. The equipment, material, power and labor necessary for the inspection and test shall be furnished by the permit holder and the permit holder shall be responsible for determining that the work will withstand the test pressure prescribed in the following tests. All plumbing system piping shall be tested with either water, smoke or air.

**18-29-312.2 Drainage and vent water test.** The water pressure test for plumbing shall be applied by closing the lower end of the vertical pipes and filling the pipes to the highest opening above the roof with water. The air pressure test for plumbing shall be applied with a force pump and mercury column equal to 10 inches of mercury. The use of spring gauges is prohibited. Special provision shall be made to include all joints and connections to the finished line or face of floors or side walls, so that all vents or revents, including lead work, may be tested with the main stacks. All pipes shall remain uncovered in every part until they have successfully passed the test.

**18-29-312.5 Water supply system test.** Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested and proved tight under a water pressure not less than the working pressure of the system; or by an air test of not less than 50 psi. The water utilized for tests shall be obtained from a potable source of supply. The required tests shall be performed in accordance with this section and Section [18-29-606.6](#).

**18-29-312.6 Gravity sewer test.** Gravity sewer tests shall consist of plugging the end of the building sewer at the last downstream structure before the public main, filling the building sewer with water, testing with not less than a 10 ft head of water, and maintaining such pressure or level for 15 minutes.

**18-29-312.7 Forced sewer test.** Forced sewer tests shall consist of plugging the end of the building sewer at the last downstream structure before the public main and applying a pressure of 5 psi greater than the pump rating, and maintaining such pressure for 15 minutes.

**18-29-312.8 Storm drainage system test.** Storm drain systems within a building shall be tested by water or air in accordance with Section [18-29-312.2](#).

**18-29-312.9 Cross connection control device inspections.** The department of water management shall inspect backflow prevention assemblies to determine proper installation including testing by a licensed Cross Connection Control Device Inspector. Reduced pressure principle backflow preventer assemblies, double check- valve assemblies, double-detector check-valve assemblies and pressure vacuum breaker assemblies shall be tested at minimum, annually, the results of annual tests shall be reported within 30 days of tests to the department of water management. In the event of test failure, immediate notification must be made to the department of water management and remedial action taken to prevent the contamination of the potable water supply.

**J. Francisco DeHoyos, Administrative Secretary**  
**ASPE Chicago Chapter Region 5 Legislation Representative**  
[FDeHoyos@dbhms.com](mailto:FDeHoyos@dbhms.com); 773.732.1150

## **AFFILIATE LIASONS**

A huge **thank you** to all of you, who braved the weather and came out to the Local 130 meeting in April. It was well received and very educational. We would also like to send a special thanks to those people who contacted ASPE to inform us that they would not be able to honor their RSVP. Having an accurate head count before the event is always useful to avoid the over ordering of food. On that note, the food was excellent! Good job team!

We had two tours through the training facility both lead by Jim Majerowicz. Thank you Jim for the great tours, education and information on the various aspects of plumbing and what is involved to become a licensed plumber.

Thank you to K.C. Akalaonu from Moen on your presentation on the "Updates to Lead Free Components in Plumbing Systems". The presentation was very informative; K.C had some great information!

We hope to see you all at this month's meeting at Westwood Tavern & Tap in Schaumburg! It is also election night. I, Nevo, hope to have been doing a good job assisting Mick the last year as Affiliate Liaison. In case you didn't know, Affiliate Liaison will no longer be an appointed position, but an elected one, and I will be running for this position at this month's meeting. So please come on out to Westwood Tavern, remember to vote and don't forget to RSVP to [Chicago.ASPE.RSVP@gmail.com](mailto:Chicago.ASPE.RSVP@gmail.com).

**Nevo Martelli and Mick Bradford , Affiliate Liaisons**

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[mickb@herkowskisales.com](mailto:mickb@herkowskisales.com); 630.688.2635

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## **CONTINUING EDUCATION OPPORTUNITY: UCLA EXTENSION PROGRAM**

ASPE has many avenues by which we are trying to enhance the benefits to membership. One of our goals is to provide the best educational opportunities possible. Another is to elevate the perception and image of what a Plumbing Engineer is, and does. One of the results of our efforts is to help establish degreed programs at universities. We are working with a couple of schools to this end. The example below is part of a UCLA Extension Program that may help us to get to the level we are working toward. Please review the information below and maybe you will find it of interest for yourself or someone that you know. This is not an ASPE program, but the instructors are ASPE members and we are working to make this beneficial for our members. There are several courses in this program. These efforts can also help to increase our membership base, which is vital to our continued growth as a society. Membership is everything and growing our numbers is one of our highest priorities.

### **Now Online! High Rise Building Plumbing Design**

#### **X 400.14 Engineering 4 units**

This course will explore the subject of High Rise Building Plumbing Design, including the components and systems typically found in such buildings, but also some less traditional approaches. Topics studied include: Sanitary Waste and Vent Stacks, Storm Water, Domestic Cold Water Systems, Hot Water Systems, Hot Water Recirculation Systems, Building Services/Utilities, Equipment, LEED and Sustainability Considerations, Plumbing Fixtures, and others. Prerequisite: Successful completion of PSD I, PSD II, & PSD III or consent of instructor. Elective course in the Construction Management Certificate.

#### **Registration # Z2147CA**

**Through May 24: \$685 / After: \$750**

Jun 24-Sep 9 (12 weeks)

*Enrollment deadline: Jun 28, 2013*

To view classes and to enroll visit: [www.uclaextension.edu/techmanagement](http://www.uclaextension.edu/techmanagement)

**"Like" us on Facebook: [Engineering & Technology](#)**

Spring quarter starts April 1.

Summer quarter starts June 24. Enroll starting April 15.

Watch for other announcements such as the ASPE Chicago Chapter Advanced Plumbing Class!

Thanks for your support!

**David E. DeBord CPD, LEED-AP BD+C, ARCA-AP**

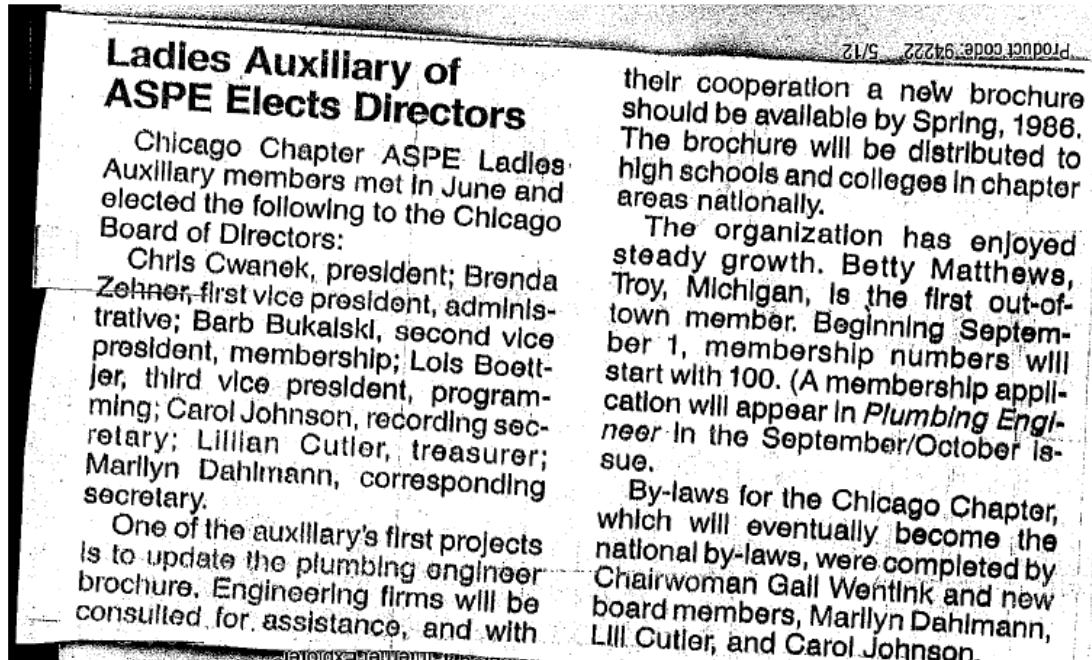
[ddebord@dbhms.com](mailto:ddebord@dbhms.com)



## **HISTORIAN**

Ladies, ladies!

The following article is from the July/August 1985 Plumbing Engineer Magazine.



The Auxillary was formed at the urging of then Chapter President Al Steele. The Auxillary assisted at the Product Show, Golf Outing and Booster Night Chapter functions. Their help was well received and everyone enjoyed their presence.

Respectfully,

**Don Johnson, Historian**

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## **IIT Student Chapter Seeks Internship Opportunities**

A few of our IIT ASPE Student Chapter volunteers are looking for internship opportunities this summer. Internships will allow these young engineers to accumulate new skills and gain a real world perspective on an occupation.

Please let me know if you have any summer internship opportunities available. I can forward you their resumes upon request.

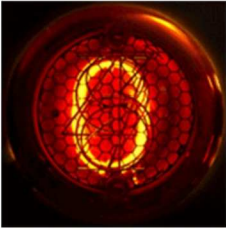
You can find more information on the IIT ASPE Student Chapter here:

<http://aspe.org/node/1177>

<http://aspeillinoistech.wix.com/aspe>

<https://www.facebook.com/aspeiit>

**Frank Sanchez, CPD; President**  
[fxs@grummanbutkus.com](mailto:fxs@grummanbutkus.com); 847.316.9251



## GUEST COLUMNIST: WATER HAMMER

### Beyond Code Requirements: Water Hammer

A **Water Hammer** is a pressure change caused by a variation of flow rate in a pipe. Water hammers are created by sudden starts or stops of liquid flows. Since water flows are restricted inside pipes, shock waves of incompressible water will travel back down the pipes deflecting everything on their paths.

The pressure transients in pipes caused by shock waves when closing or opening valves can be calculated as:

$$dp = 0.070 v l / t$$

where:

- $dp$  = increase in pressure (psi)
- $v$  = flow velocity (ft/s)
- $t$  = valve closing time (s)
- $l$  = upstream pipe length (ft)

#### Example - Water Hammer when Closing Solenoid Valve

The pressure increase in a 100 ft water pipe where the velocity is 6 ft/s when a solenoid valve closes in 0.1 s can be calculated as:

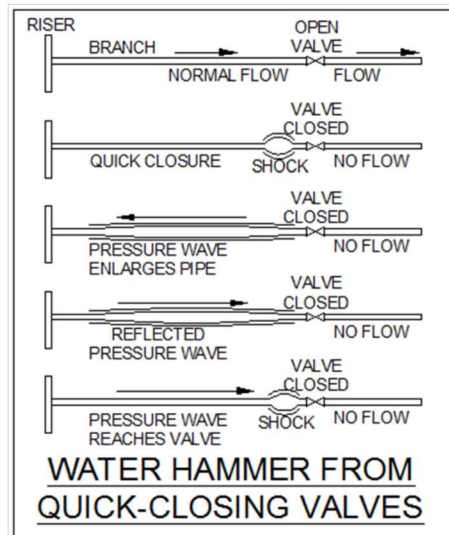
$$dp = 0.070 (6 \text{ ft/s}) (100 \text{ ft}) / (0.1 \text{ s})$$

which is 350 (psi)

If the solenoid closes in 1 s (solenoid valve with damper) - the pressure increase is reduced to 35 psi.

We should design cold water distribution systems to minimize velocity-related problems in a cost-effective manner. For an open system (like plumbing!), every time a valve opens or a fixture is used, both flow and pressure change, but when excessive velocity is also present, these hydrodynamic changes can be destructive. Excessive velocity-related problems include erosion, cavitation, entrained air separation, whistling, and water hammer.

Water hammer (hydraulic shock) is the term commonly used to describe the destructive forces, pounding noises, and vibrations that develop in a piping system when a column of non-compressible liquid flowing at a given velocity is stopped abruptly. The dynamic pressure wave generated at the point of impact travels back and forth through the piping system until the wave energy is dissipated, producing the characteristic sound associated with this phenomenon, as if someone was hitting the pipe with a hammer.



The velocity of the pressure wave can be taken to be a constant. For a typical metal pipe water system, the pressure wave velocity averages 4,000–4,500 fps. The maximum pressure rise is approximately 60 times the change in velocity, and at a typical maximum design velocity of 8 fps, quick valve closure can produce a shock pressure of 480 psi. Most valves and fittings used in a water distribution system are designed and constructed for normal maximum working pressure of 150 psi. Subjecting a system to repeated pressure surges of almost 500 psi can cause serious damage.

....continued on next page...

## **WATER HAMMER CONTINUED...**

Plastic pipe cold water systems are becoming more common. The magnitude of the pressure wave is some function of pipe elasticity and wall thickness. PVC, CPVC, PVDF, and poly-propylene have thicker walls than metal pipe, but their modulus of elasticity is about 100 times lower, which lowers the velocity of the pressure wave and therefore lowers the overall magnitude of the shock pressure wave. The pipe manufacturer should be contacted for appropriate design constants.

### ***Air Chambers (Required in Chicago)***

For hydraulic shock system protection, air chambers essentially have been replaced by pre-manufactured water hammer arresters. The air chamber device consists of a capped piece of pipe of various lengths, some with fittings to facilitate draining and recharging, but mostly not!

The two main components of any shock absorber are *variable displacement* and *energy dampening*. Air chambers exhibit superior variable displacement and rely on the naturally occurring dampening effects of the piping for their effectiveness. But, ***air chambers are suitable only for the temporary control of shock***. The entrapped air charge is rapidly depleted for a number of reasons, and, once gone, the device provides no shock protection at all. Two primary reasons for the depletion of the entrapped air are entrainment caused by turbulence at a shock event and the increased solubility of gas under pressure. This depletion of the air charge occurs continuously, even as the system sits idle.

### ***Water Hammer Arrestors***

**The appropriate use of engineered water hammer arrestors, is an integral part of an overall cost-effective design.** Water hammer arrestors can rapidly attenuate shock pressure and confine its effects to the section of piping in which it was generated. Water hammer arrestors have a sealed gas chamber separated from the non-compressible fluid by either a bellows or piston arrangement, to ensure consistent, long-term operation.

For more info, there is a lot of info available on the internet, in books, and from manufacturers (for example, visit <http://www.jrsmith.com/assets/documents/literature/pm1054.pdf>). For an overview, take a look at this: [http://en.wikipedia.org/wiki/Water\\_hammer](http://en.wikipedia.org/wiki/Water_hammer).

Thanks for reading.

**Nick Z. Tube, CPD LEED-AP BD+C, ARCSA-AP**

Mystery Member

ASPE Chicago Chapter

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## **APRIL MEETING ATTENDANCE**

The following individuals attended the April 2013 meeting of the ASPE Chicago Chapter. In accordance with ASPE Society policy, these individuals are entitled to **0.75 RU's** toward the required 24 RU's needed every two years to maintain CPD registration. Meeting attendance is also recognized by the Illinois Department of Professional Regulation to count as 1 PDH towards the required 30 PDH's needed every two years to renew Professional Engineering licenses.

Alex Fernandez	E.D. Kedzie	Jim Majerowicz	Mark Somenzi
Anthony Dauginas	Ed Lichner	Joe Ficek	Mike Ponx
Brandon Taylor	Ernest Havron	Justin Sperry	Nevo Martelli
Dan Patt	Francisco DeHoyos	KC Akalanu	Patrick O'Boyle
David DeBord	Frank Sanchez	Luciana Kayo	Paul riedinger
David Erickson	Hank Lonzon	Mariusz Klimer	Rick Butler
David Ewing	Jill Dirksen	Mark Delange	Sean Allard
Dennis Richards	Jim Lagina	Mark Mannarelli	Tom Higgins IV



## **INDUSTRY NEWS**

Election time is almost here. If you would like to become more involved in the chapter, please consider running for a Chicago ASPE Board position. The Board is always looking for new faces and new ideas. We have a great industry and a great chapter but others are having fun as well. Check out the conventions, meetings and golf events below. If there is an organization you would like me to contact, please send me an e-mail at [kseier@esdglobal.com](mailto:kseier@esdglobal.com).

### **American Society of Sanitary Engineering (ASSE)** (<http://www.asse-plumbing.org/calendar.html>)

#### **ASSE 2013 Mid-year Meeting**

Dates: April 17-20

Location: TBD, Cleveland, OH

Details: <http://www.asse-plumbing.org/calendar.html>

### **National Fire Protection Association (NFPA)** ([www.nfpa.org](http://www.nfpa.org))

#### **NFPA Fire and Life Safety Conference 2013**

Dates: June 10-13

Location: Chicago, IL—McCormick Place

Details: <http://www.nfpa.org/itemDetail.asp?categoryID=943&itemID=22735&URL=Training/Events%20calendar>

**NFPA Training** throughout the US.

<http://www.nfpa.org/itemDetail.asp?%09categoryID=943&itemID=22735&URL=Training/Events%20calendar>

### **Society of Fire Protection Engineers (SFPE)** ([www.chicagosfpe.org](http://www.chicagosfpe.org))

#### **IBPA Golf Invitational**

Date: Tuesday, June 25

Time: TBD

Location: Willow Crest Golf Club, Oak Brook, IL

Cost: \$395/person

Details: <http://www.ilburnpreventionassoc.com/>

### **PAMCANI**

([www.pamcani.org](http://www.pamcani.org))

PAMCANI's industry-wide calendar:

[www.piccal.org](http://www.piccal.org)

#### **PAMCANI Golf Outing**

Location: West Chicago

June 21st, 2013

<http://www.pamcani.org/calendar/register.html>

### **Illinois Fire Prevention Association (IFPA)** ([www.ifpanet.org](http://www.ifpanet.org))

#### **IFPA May Meeting – Past President's Night Out**

Date: Tuesday, May 14

Time: 6:00 pm

Location: TBD

Details: <http://www.ifpanet.org/>

### **Illinois Association of Plumbing-Heating-Cooling Contractors (ILPHCC)** ([www.ilphcc.com](http://www.ilphcc.com))

#### **Illinois PHCC 120<sup>th</sup> Annual Convention**

Dates: June 13-15

Location: Marriott Bloomington-Normal, Normal IL

Details: <http://www.ilphcc.com/>

### **Illinois Chapter of ASHRAE** ([www.illinoisashrae.org](http://www.illinoisashrae.org))

#### **Humidity Control - Design, Controls, Components and Performance Criteria**

Date: Tuesday, May 14

Time: 2:30-8:00

Location: Park Tavern, 1645 W Jackson, Chicago, IL 60612

Cost: \$50 Member, \$55 Non-member

Details: <http://www.illinoisashrae.org/>

### **USGBC – Illinois Chapter (LEED)** ([www.usgbc-illinois.org](http://www.usgbc-illinois.org))

**Events Calendar** (Hyperlink)

### **Refrigeration Service Engineer's Society (RSES)** ([www.rses.net](http://www.rses.net))

No report

### **American Society of Professional Estimators** ([www.aspechicago.org](http://www.aspechicago.org))

#### **May Meeting**

Date: Thursday May 16

Time: 5:30pm

Location: Brio Tuscan Grill

Details: <http://www.aspechicago.org/html/events.html>

**Keith Seier, PE, CPD, ARCSA® AP**  
**Corresponding Secretary**  
[kseier@esdglobal.com](mailto:kseier@esdglobal.com); 312 456.2338



# Chicago ASPENEWS



## 2012-2013 ASPE Chicago Meeting Schedule

Date	Primer	Technical Session	Location
September 20, 2012	Phoenix	Waste Water Recycling - Success Stories from Down Under by Phoenix/Aquacell Water Recycling Solutions	Westwood Tavern & Tap 1385 N. Meacham Rd Schaumburg, IL
October 18, 2012		Thermoplastics for use in Acid Waste Drainage and High Purity Water Systems by IPEX with New-Tech Marketing	La Villa Restaurant 3632 N Pulaski Rd Chicago, IL
October 27-31		2012 ASPE Convention and Exposition October 27—31	Charlotte Convention Center, Charlotte, NC
November 15, 2012 <i>One Hour of IL State CEUs Provided</i>	Viega	Keeping on the right side of State & Local Plumbing Codes by Jim Majerowicz of Local 130	Parthenon 314 S Halsted St Chicago, IL
December 20, 2012		ASPE Chicago Chapter Booster Night and Holiday Celebration	La Villa Restaurant 3632 N Pulaski Rd Chicago, IL
January 17, 2013		The Basics of Geothermal, Including Hybrid Systems by Scott Hackel of The Energy Center of Wisconsin	Parthenon 314 S Halsted St Chicago, IL
February 21, 2013 <i>One Hour of IL State CEUs Provided</i>		Indirect Water Heater Systems for Domestic Applications by Mark Kaulas of Bornquist	Venuti's 2251 W. Lake Street Addison, IL
March 21, 2013	Available	Components of Medical Gas Systems by Ross Williams of ARTEC	La Villa Restaurant 3632 N Pulaski Rd Chicago, IL
April 18, 2013	Updates to Lead Free Plumbing	Local 130 Tour	Plumber's Training Hall Local 130 1400 W Washington
May 16, 2013		High Purity Water Systems and Healthcare Designers Guidelines by Dan Heilman and Richard Turkiewicz Of Siemens Industry Inc.	Westwood Tavern & Tap 1385 N. Meacham Rd Schaumburg, IL
<b>June 14, 2013</b> <b>*New Date*</b>		<b>ASPE Chicago Chapter Golf Outing</b>	Hilldale Golf Club 1625 Ardwick Drive Hoffman Estates, IL
Saturday August 10, 2013		ASPE Chicago Chapter Summer Event	Schiller Woods Grove #12
September, 2013		ASPE Chicago Chapter Product Show	TBD

If you would like to present any of these topics or become a meeting sponsor, please contact Rick Butler at [rbutler@lochinvar.com](mailto:rbutler@lochinvar.com) or 224.238.8515