



# 2018 WQRF ANNUAL REPORT

### LETTER FROM THE PRESIDENT

Dear Friends and Contributors,

I'm pleased to share with you WQRF's Annual Report for 2018. I believe our Foundation and industry have a bright future and WQRF research will be the tool to sustain the growth of our businesses and drive innovation.

At the beginning of 2018, WQRF added three new director positions to the Board, with one being the immediate past president of WQA and two are open to non-past presidents or past presidents of WQA. The purpose of this change is to provide flexibility to bring in specific knowledge when needed, such as scientific expertise, and to maintain alignment with the strategic objectives for the industry.

Included in this report are summaries of the on-going research projects and what we can expect in 2019. The new projects were prioritized by the Research Advisory Committee and selected for their meaningfulness to the industry. The annual grant program is a unique way for the Foundation to fund new and innovative ideas for the future of the water quality improvement industry.

This would not be possible without the support from our generous contributors through our Investing in Your Future campaign, as well as annual sponsorships and donations, who are all recognized in this report.

Lastly, I would also encourage you to visit our new website at www.WQRF.org. The new, separate website is another achievement of growth made possible by our generous contributors.

Sincerely,

Ned Jones

**WQRF** President

Med Jones



# 2018 WQRF DIRECTORS



**President** Edward (Ned) Jones, CWS Gordon Brothers Inc. Salem, OH



Mike Baird TST Water, LLC Temecula, CA



Richard Mest Master Water Conditioning Corp. Pottstown, PA



**Vice President** Dennis Rupert, CWS, CI Rupert's Culligan Hillsdale, MI



Frank Brigano, PhD Marmon Water, Inc. West Haven, CT



Denise Urbans, CWS SHEDWATER LLC Glen Mills, PA



**Secretary/Treasurer** Chris Layton Chris Layton Water Consulting Santa Ana, CA



Robert Maisner Paragon Water Systems Tampa, FL



James Wakem, MWS, CI, CWR Atlantic Filter Corporation West Palm Beach, FL

# **WQRF OVERVIEW**

The Water Quality Research Foundation (WQRF) was formed in 1952 to serve on behalf of the Water Quality Association (WQA) as a universally recognized, independent research organization. The long-term goal of WQRF is to achieve sustained growth to conduct and fund scientific research on subjects relating to the water quality improvement industry.

The WQRF's Research Agenda currently includes:

- Final Barrier: Investigate point of use and whole house devices as a means for sustainable treatment.
- **Emerging Contaminants:** Research to aid or support implementation of technologies to provide cost effective options for emerging contaminants.
- **Regulatory Affairs:** Conduct research to support efforts to defeat ill-conceived codes and rules or promote technologies in highly regulated areas.
- **International Affairs:** Provide independent research support for international growth and efforts of the water treatment industry.
- **Public Awareness:** Increase consumer awareness of water treatment through educational and extension work, demonstrations, shows, symposia, expositions, publications and surveys.
- **Sustainability:** Investigate ways to sustain the industry, help protect the environment and aid adoption of sustainable treatment options.

Since inception, WQRF has sponsored numerous research studies which have generated essential marketing information, positively impacted legislative change and helped decrease product testing costs.







Principal Investigators on WQRF projects from left to right: Dr. Marc Edwards, Virginia Tech; Dr. Kelly Reynolds, University of Arizona; Dr. George Zhou, Purdue University

## 2018 RESEARCH RECAP

#### **EMERGING TECHNOLOGY BENCHMARKING STUDY**

**Principal Investigators:** Marc Edwards, PhD and Christina Devine, MS from Virginia Tech.

**Study purpose:** To develop, validate and demonstrate a standardized scaling test protocol (SSTP) that will allow any lab to achieve reproducibility when evaluating the performance of any scale reduction device or technology. The protocol will also benchmark performance for standardized solutions and a water with a simple anti-scaling method and present a means to track critical dimensions of scaling at all key control points representative of a building water system. The SSTP will measure multiple essential parameters of calcium carbonate scaling, including the total scale deposited in the system, the portion precipitated in bulk water, and the portion deposited adherently to surfaces of different segments of downstream plumbing. This comprehensive evaluation will enable holistic studies of scaling control.

**Industry impact:** Quantifying relative advantages of each approach in waters with and without corrosion/scaling inhibitors will be important in understanding performance of scale reduction devices in the marketplace. All brands and manufacturers of products tested will remain confidential, but the description of the technology category the product is classified in will be included. The protocol will be made available after the research concludes for any manufacturer to test their product against, if desired.

**Expected completion:** September 2019



#### **2017 GRANT RECIPIENT**

Household POU Filters: Tools for Long-term, Large Volume Monitoring of Tap Water Quality and Human Health Risks

**Principal Investigator:** Kelly Reynolds, MSPH, PhD from University of Arizona

**Study purpose:** Microbiological contaminants may be present in drinking water supplies but are hard to detect without real-time monitoring tools. This study seeks to develop a monitoring scheme for using household POU

devices to track microbial hazards in private and municipal drinking water supplies and use monitoring data to determine individual and population exposure risks with and without a POU device.

**Expected results:** Health assessment data will be used in conjunction with cost-benefit models from the WQRF-funded study "Cost Benefits of Point-of-Use Devices in Reduction of Health Risks from Drinking Water" to determine the cost-benefit of the POU devices evaluated in this study.

**Industry impact:** This study will benefit the POU industry overall by quantifying microbial exposure and risk potentials in tap water sources and by quantitatively demonstrating the health benefit of household POU devices.

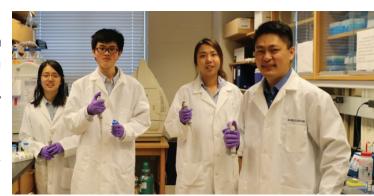
**Expected completion:** January 2019

#### **2018 GRANT RECIPIENT**

**Emerging Contaminant Removal and Microbial Growth in Membrane Filtration and Activated Carbon Point-Of-Use System** 

**Principal Investigator:** George Zhou, PhD from Purdue University

**Study purpose:** Investigate removal efficiencies of RO and POU Carbon for emerging contaminants: PFBS, PFHxS, manganese, uranium, and assimilable organic carbon (AOC).



**Expected results:** It is anticipated that this research will provide performance data on removal efficiencies of representative emerging contaminants, new knowledge on the effects of water quality on the performance of POU systems, and mechanisms of microbial growth.

**Industry impacts:** As a result of this study, the industry will be able to develop cost-effective treatment devices to improve water quality and mitigate risks of emerging contaminants in drinking water.

**Expected completion date:** October 2020

### RECENTLY COMPLETED PROJECTS

- Optimization of Water Softeners for Reduced Influent Chloride found, on average, a 47% reduction in the concentration of chloride discharge when softeners were replaced with systems meeting 4,000 grains/lb. salt efficiency, and a 27% reduction was found by optimizing existing systems.
- The Cost-benefit of Point-of-Use Devices in Reduction of Health Risks from Drinking Water, published in the peer-reviewed scientific journal *Environmental Research*, found in the case study of Flint, MI the calculated lifetime loss to the community is \$435M, whereas a 5-year POU activated



Executive summaries and educational materials available on wqrf.org

- carbon with lead adsorption capabilities community intervention strategy would have cost \$11M.
- National Occurrence of Boil Water Notices from 2012-2014 found 14% of these notices were from E. Coli contamination and 53% were from water main breaks or leaks.
- Counterfeit Refrigerator Filters Performance Study verified that filters illegally using product certification and manufacturer logos were not able to remove the health contaminants claimed.

### PROJECTS IN THE PIPELINE FOR 2019

- Predictive Modeling of US Drinking Water Emergencies Study Purpose is to use historical data and statistical modeling to get better prepared for what the most likely drinking water emergencies will be in the future.
- Contaminant Level Occurrence Above the Maximum Contaminant Level Goal (MCLG) The purpose of this study is to compile occurrence data to identify frequency, concentration, and population exposure of arsenic, lead and DBP's detected at levels below the enforceable MCL, but in excess of the MCLG.
- Sustainability Comparison: POU/POE and Centralized Treatment for Safe Drinking Water Act Compliance It is anticipated that this research project will consist of a case study, which compares the sustainability of centralized versus POU/POE treatment for small public water systems.

### THANK YOU TO WQRF'S RESEARCH ADVISORY COMMITTEE

**Doug Anderson** Culligan International Company

Michael Beck Pentair Water Purification

**Stephen Ver Strat** Amway

**George Lutich** Paragon Water Systems

Michael Baird TST Water, LLC

Chuck Driessen, MWS

**Chris Wilker** 

John Packard, MWS, CI

**Christopher Layton** 

**Randall Easton** 

Driessen Water, Inc.

**EcoWater Systems LLC** 

Culligan Water Conditioning

Chris Layton Water Consulting

US Water Culligan Group

**Total Net Assets** \$3,042,795

Total Spent on Research \$175,095

Unaudited at time of Annual Report print.

# THANK YOU TO OUR WQRF CAMPAIGN PARTNERS FOR SUPPORTING A STRONGER FUTURE FOR OUR INDUSTRY!

**Manufacturer Partners** 

(\$250,000+)

**Dealer and Other Partners** 

(\$100,000+)







Visionaries

Gordon & Gayle Miller Foundation













Easton U.S. Water Company Group ·Hall's Water ·Mast Family

#### (\$50,000+)

•Edward J. Fierko •Denise Urbans Hader

•EJF Associates

 Bob Hader Janice Urbans



Driessen Water, Inc.

(\$50,000+)







#### **Ambassadors**



·Hunting Family

·Stewart Water

Quality Water

·Consolidated Water Group ·Gibson's Clean Water Inc.

·Houston & Dallas, TX ·McCardel

 Christopher J. Layton Advocates



#### (\$25,000+)

·SharpWater ·South West, Inc. ·Sterling Water, Inc. ·The Good Water Company **·WATERCO** 





SYSTEMS





Dow Water & Process Solutions

Hellenbrand

Pure & Gentle



**ENPRESS LLC** 









·Hebert Family

·Sioux Falls

•Water Quality Association of Wisconsin

·Southwest Water Conditioning Inc.

#### (\$10,000+)







WATER & AIR

SWR SHELTON'S

(\$5,000+)





(\$10,000+)





#### **Stewards**

Richard & Janice Mest •Perialwar "Regu" Regunathan

·Bluff Country Water Corp. ·North Central Ohio ·Rupert's ·Low Country Water ·Sanders Services Inc. Conditioning, Inc.

·Water Conditioning of Central Indiana







#### Meredith's Water Companions

·Logan, UT

(Less than \$5,000)



 Carol, Mike & Orville Schaefer Family Culligan Dealers Association of WI •Ken G Kabira •Tyler J. Eble •Kimberly M. Redden •All-Right Water ·Purification ·Frank A. Brigano

·Cindy Schieber ·Eric Yeggy Denise Nasternak & Douglas Haring •TG Water Systems, LLC



·Greater Kansas City ·Janesville, WI Kitzman's ·Lambert's ·Lansing ·Niagra ·Northeastern Water Services ·Northwest ·Of Mechanicsburg ·Southeast Texas ·T&B Enterprises ·Terre Haute, IN ·Trilli's Water ·Water Meister Inc. ·Waugh's ·Winona





### THANK YOU TO OUR 2018 SPONSORS

### Thank you to SEAS Capital Partners & AMWAY for sponsoring the 2018 5K Run for Research!





### Thank you to our 2018 Midyear Leadership Conference Sponsors:

Allied Purchasing Company	Freeman Water Treatment	<b>NSF International</b>
Amway	<b>Gordon Brothers</b>	Packard Culligan
<b>Atlantic Filter Corporation</b>	Hawkin's Water Tech	Parker-Hannifin
Cargill	Hellenbrand	Performance Water Prod
CDANA	Jones Day	<b>Quality Water Services</b>

02711111	,01100 2 41/	Quantity Tractor Services
Charger Water Conditioning	KDF Fluid Treatment	ResinTech
Clack Corporation	Kinetico Incorporated	Sharp Water Culligan
Culligan Four Group	KX Technologies	<b>Sterling Water Inc.</b>

Culligan International	Master Water Conditioning	Turbidex
DS Services	McGowan Water Conditioning	Water-Right

**Enpress** Nestle Waters North America Water Quality Products Magazine

### Thank you to our Annual Giving Contributors:

Annual Giving is a one-time gift received during the calendar year not associated with a specific fundraising campaign or sponsorshop.

- APEX Water Pump Filter & Co. Inc.
- Carroll Water
- Connie Vogt
- Culligan of Amarillo
- Culligan of Rio Grande
- Eastern Water Quality Association\*

- EPI Water
- Eric Yeggy
- Frank Brigano
- Gunther Salt Company\*
- Hatch Global Consulting
- Hellenbrand, Inc.\*\*

- Houlihan's Restaurant
- Keurig Green Mountain
- Maher Water Corporation

**Products** 

- Mori & Co.
- Nalco Water
- Peacock Water Conditioning



<sup>\*\*</sup> In memory of John Piasecki and Tom Olszewski \*Contributed ≥ \$1,000