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2020 WQRF ANNUAL REPORT



LETTER FROM THE PRESIDENT

Dear Friends, Colleagues, and Contributors,

As I reflect on my first year as President, I feel so proud of WQRF's progress during an unprecedented year of uncertainty. There were times when wet lab research was completely halted because academic laboratories closed; but thankfully, the majority of our research projects and all of our task force work never lost momentum. WQRF released its first-ever online, interactive tool, the Contaminant Occurrence Map, resulting in tripling of our website traffic. Our staff has furthered our governance structure with new Board approval processes to review potential funding for urgent research and the continuation of past studies, while maintaining the integrity of fiscal and science-based prudence. The Research Advisory Committee continued evaluating future research and opportunities for the most impact and value to the industry.

The WQRF Board of Directors approved three new researchers for projects, you can read the press releases for each of these on our website at www.wqrf.org/media. This brings our current total of on-going research to 6 projects, with 3 expected to complete in 2021. You can read more about these projects in this annual report or on WQRF.org.

- 1. 2018 Grant: Emerging Contaminant Removal and Microbial Growth in Membrane Filtration and Activated Carbon Point-Of-Use System
- 2. 2020 Grant: Consumer Tools for Understanding Water Quality Contaminants and POU/POE Options
- 3. Sustainability Comparison: POU/POE and Centralized Treatment for Safe Drinking Water Act Compliance
- 4. Emerging Contaminants Phase 1: Consumer Study
- 5. Predictive Modeling of US Drinking Water Crises
- 6. Case Studies of POU/POE use for Safe Drinking Water Act (SDWA) Compliance

The Research Advisory Committee conducted its 3rd prioritization process of new research concepts. Included were two surveys where contributors ranked the concepts as potential projects and shared their support or concerns. The surveys drive the RAC's selection process which weighs contributor interest with project cost, value and complexity; always being mindful of existing or ongoing research regarding the submitted topics.

Words can't describe the heartfelt thank you to our dedicated and passionate volunteers, contributors and dynamic staff; you are all amazing! The volunteers dedicating time and sharing their expertise on research task forces fuels the value of the research. Our Board and committees provide insightful direction in fulfilling our WQRF mission and vision. Our dynamic staff guided the Board, committees and task forces through over 54 meetings in 2020; job well done team!

Last but not least, I thank the dedicated Leadership Circle, who maintained their financial contribution commitments despite all the economic uncertainty during our Covid-19 journey. The Leadership Circle's unwavering commitment proves the value of our efforts.

I wish you all the best in 2021 and beyond!

Sincerely,

Richard Mest, MWS WQRF President, 2020-2021



2020 WQRF DIRECTORS



President Richard Mest Master Water Conditioning Corp. Pottstown, PA



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



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



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Chris Layton Chris Layton Water Consulting Santa Ana, CA



Denise Urbans, CWS SHEDWATER LLC Glen Mills, PA



James Baker NuStream Filtration Dayton, OH



Steve Ver Strat Amway Ada, MI

COMMUNICATION

As WQRF continues to fund more projects and release results from more completed work, communications have naturally increased. There are 4 major milestones for a research project that are communicated to the industry through a variety of different channels.

	Press Releases	Newsletters	Webinars/ Conferences	Magazine Articles	Podcasts	Social Media	Materials on WQRF.org
Concept Approval	X	X				X	
Status Updates		Х	X	Х	X	Х	
Completion	X	X	X	X	X	X	X
Scientific Journal Publication	x	x				X	x
General WQRF Updates		X		x	x		X

Additionally, WQRF has started closely monitoring website analytics following our communication tactics to measure which channels result in website traffic. Before the launch of the Contaminant Occurrence Map in September, the average monthly unique visits to WQRF.org were ~300. After the launch, the monthly unique visits to the website increased considerably.

2020	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Unique Page Visits WQRF.org	528	422	246	316	283	260	180	214	1,636	901	636	864

BUSINESS OPERATIONS

It takes a significant number of volunteers generous with their time, expertise and feedback to make WQRF run efficiently and effectively. In 2020, WQRF held 54 meetings and conference calls – that's an average of a meeting every working week! We are proud of the staff and volunteers that support WQRF and cannot thank them enough for their time and commitment to research!

WQRF Board, Committee, or Task Force	Meetings or Calls
Board of Directors	6
Research Advisory Committee	10
Development Committee	4
Finance Committee	4
Benchmarking Communication Task Force	2
Contaminant Map Research Task Force	3
Contaminant Map Communications Task Force	4
Emerging Contaminant Consumer Study Task Force	4
2018 Grant Task Force	3
2019 Grant Task Force	4
Case Studies for POU/POE for Compliance Task Force	3
Predictive Modeling Task Force	4
Sustainability Comparison Task Force	3

2020 WQRF FINANCIALS

It is through the generosity of contributors that WQRF proudly reports the financials for 2020 (unaudited at time of report printing). The Leadership Circle is a group of committed Capital Campaign contributors who continue to give to WQRF's Annual Fund and also includes new contributors who give at the highest Annual Giving levels.

Unrestricted Net Assets	\$1,572,790
Temporarily Restricted Net Assets	\$405,829
Board Designated + Restricted Net Assets	\$1,000,772
Research Project Contracts	(\$202,479)

2020 ONGOING RESEARCH

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

Principal Investigators: Zhi (George) Zhou, Ph.D. — Purdue University; 2018 WQRF Grant Recipient

Objectives:

- 1. Investigate removal efficiencies of RO and POU carbon for emerging contaminants: PFOS, PFBS, PFHxS, manganese, uranium, and *Legionella*.
- 2. Determine water quality conditions that would give the highest removal efficiency and lowest microbial growth potential.

Industry Impacts: This research will provide performance data on removal efficiencies of representative emerging contaminants, and new knowledge on the effects of water quality on the performance of POU systems and mechanisms of microbial growth. 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: 3rd quarter, 2021

Consumer Tools for Understanding Water Quality Contaminants and POU/POE Options

Principal Investigator: Kelly Reynolds, Ph.D. – University of Arizona; 2020 WQRF Grant Recipient

Objectives:

- 1. Create user-friendly, web-based educational materials for consumers to learn about potential health risks from drinking water contaminants and POU/POE treatment options all in one place.
- 2. Produce an educational training video for the POU/POE industry.

Industry Impacts: This project is expected to improve public awareness of drinking water contaminants and POU/POE treatment options by delivering information from trusted scholarly sources in a simplified language and format.



Industry professionals can use this credible, 3rd party tool with consumers to discuss their water and health.

Expected completion date: 1st quarter, 2022

Sustainability Comparison Study: Assessing Centralized and POU/POE Treatment for Small System Compliance to the Safe Drinking Water Act

Principal Investigator: Emily Kumpel, Ph.D. – University of Massachusetts Amherst

Objective: Utilize real-world data to compare the sustainability, defined as the human, environmental and

economic impacts, of centralized drinking water treatment to POU/POE treatment in small water systems in the United States.

Industry impacts: Research results will be used by the industry to identify and understand in which contexts POU/POE might yield the most benefits when used by small drinking water systems for compliance to the Safe Drinking Water Act.

Expected completion date: 2nd quarter, 2022



RECENTLY COMPLETED PROJECTS

Find the executive summaries and educational handouts on WQRF.ORG!

- 1. 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.
- 2. The Cost-benefit of Point-of-Use Devices in Reduction of Health Risks from Drinking Water found the calculated lifetime loss to the Flint, MI community from lead exposure is \$435M, whereas it would

would have cost \$11M to fund a 5-year community intervention strategy supplying POU activated carbon filters with lead adsorption capabilities, or \$26M for a 5-year POU RO intervention strategy.

- **3.** *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.
- 4. Counterfeit Refrigerator Filters Performance Study verified that filters <u>illegally</u> using product certification and manufacturer logos were not able to remove the health contaminants claimed.
- 5. 2017 Grant recipient The Household Point-of-Use Pathogen Survey results show the proof of concept that household water treatment filters are effective for monitoring drinking water quality for large volumes of water over long periods of time.
- 6. The Contaminant Occurrence project conducted a state-by-state call for information to compile occurrence data to identify frequency, concentration, and populations affected by aesthetic contaminants, as well as occurrence of select regulated contaminants detected at levels below the enforceable MCL, but in excess of the MCLG. An interactive data tool that corresponds with the occurrence data collected is available for public use at www.wqrf.org/map

PROJECTS IN THE PIPELINE FOR 2021

8. Emerging Contaminants Consumer Study

- a. Perform a US consumer study to determine: 1) which emerging contaminants are already known by consumers, and 2) how the messaging of a POU/POE product influences a consumer's decision to treat their water.
- b. Funding was approved in December 2020; the project will begin in January 2021.

9. Predictive Modeling of US Drinking Water Crises

- a. Develop a predictive model, which utilizes the historical drinking water crises data collected by a previously completed WQRF-funded project, to identify contaminants of concern for the future and help the drinking water treatment industry prepare to provide treatment solutions.
- b. A funding approval for phase 2 is anticipated in Spring of 2021.

10. Case Studies of POU/POE Use for Safe Drinking Water Act (SDWA) Compliance

- a. Compile a database and summary reports of existing case studies of public water systems using POU/POE systems for compliance to the SDWA, and publish a gap analysis of any future research needs to support the use of POU/POE treatment for compliance.
- b. WQRF is currently vetting research proposals for this project. A funding approval is anticipated in Spring of 2021.

11. Survey of POE Operating Systems: Water Usage, Efficiencies and Discharges

- a. Collect real-world data that would give a baseline of modern POE equipment performance in terms of water usage, discharges, and salt efficiencies.
- b. Task force work to develop the Request for Proposals (RFP) is anticipated to begin in 2021.

12. 2021 WQRF Grant Program

- a. For the 2021 Grant, researchers will submit their own unique study ideas that fit WQRF's selected research agenda categories of Emerging Contaminants, Final Barrier, and Sustainability.
- b. An RFP is expected to be released in 2nd quarter, 2021.

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The Leadership Circle is a group of committed Capital Campaign contributors who continue to give to WQRF's Annual Fund and also include new contributors who give at the highest Annual Giving levels.

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WQRF RESEARCH ADVISORY COMMITTEE

The Research Advisory Committee (RAC) reports directly to the WQRF Board of Directors. The charges of the Committee are to:

- 1. Review the potential project list to identify short and long-term projects which fit the research agenda
- 2. Nominate additional projects of interest for consideration
- 3. Provide ongoing input regarding industry trends and issues that impact potential research priorities
- 4. Make recommendations to the WQRF Board of Directors, as a Committee
 - a. Written recommendations submitted to the WQRF Board of Directors
 - b. Participation in key WQRF Board of Director meetings to act as the voice for Contributors

The RAC is seeking additional members for the Committee to provide fresh perspectives and help prioritize new research concepts submitted by the industry. Please contact staff liaison Kim Redden (KRedden@wqrf.org or 630-929-2512) to find out more.

Thank you to WQRF's Research Advisory Committee:

Member	Company	Title	
Michael Baird	Aquamor LLC	Chairperson	
Doug Anderson	Culligan International Company	Member	
Randall Easton	US Water Culligan Group	Member	
Michael Herman	Ultrapure & Industrial Services, LLC	Member	
Christopher Layton	Chris Layton Water Consulting	Member	
John Packard	Culligan Water Conditioning	Member	
Shawn Talley	EcoWater Systems LLC	Member	
Stephen Ver Strat	Amway	Member	
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Scott Schiesser	Driessen Water, Inc.	Member	

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- ResinTech Inc.
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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 sponsorship.

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- Mr. Richard Mest

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