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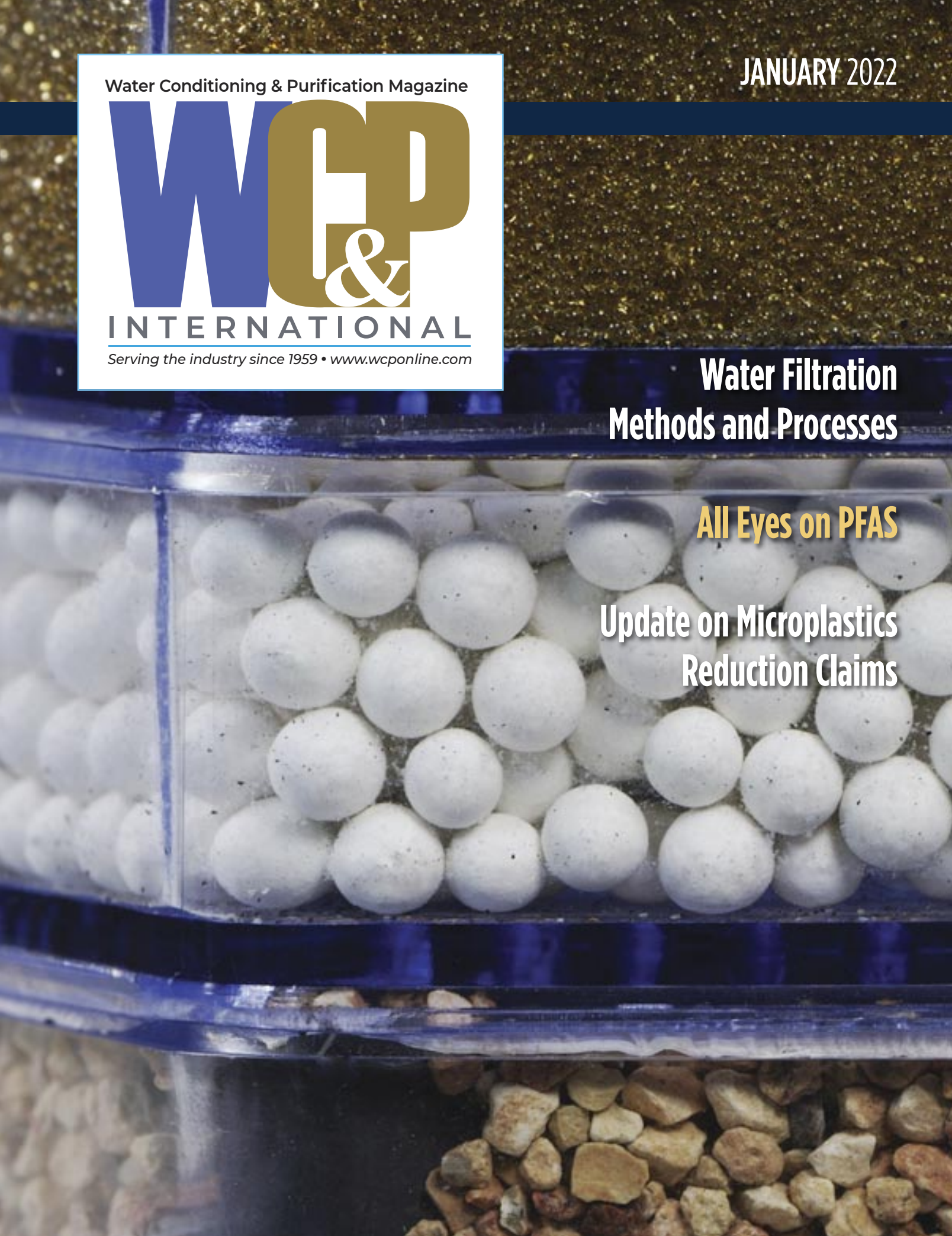

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WC&P

January 2022 | Volume 64, Number 01

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Viewpoint

New Plans for the New Year

I used to be a staunch New Year's resolutions person. Each year I would brainstorm ideas for resolutions, narrow down the list to the most feasible ones and declare my goals on January 1. Over time, I seem to have lost the zeal for official resolutions, but I still love the idea of January 1 being the starting point of exciting things to come.

This January, we are excited to announce our new podcast series "Straight from the Tap." This will be a monthly podcast featuring discussions with people in the water treatment industry. Each episode will be between 20 and 30 minutes, perfect for a commute, a drive to a job site or the time it takes to run a quick errand. I hope you will tune in and listen to "Straight from the Tap" on your favorite podcast service (Google Podcasts, Apple Podcasts, Spotify and more).

It's also time to start thinking about the *2022-2023 Buyers Guide*. Published in June, the guide is the most widely distributed issue of the year and we will be handing out copies at all major tradeshows in 2022 and 2023. To get your listing, just head over to the *WCP* website (wcponline.com) and click on the *Buyers Guide* button at the top. Now you can enter all your pertinent data, upload your logo and pay by credit card online.

Filtration is the mainstay of water treatment, with earliest references to its use dating back more than 5,000 years. Gary Battenberg, Argonide Corporation, starts a series of articles on filtration with the history and development of the earliest known water filtration processes and how it relates to modern innovation. And with filtration being a primary antidote to the prevalence of PFAS in drinking water, Sam Lodge of testing company Phenomenex, takes a close look at how we may have to live with these forever chemicals for some time to come. As more becomes known about them, better testing will help bring the problem closer to resolution through newer and better processes.

Another 'contaminant' getting a lot of press the past couple of years is microplastics. We've heard a lot about the different garbage patches of plastic floating in the oceans and much is being done by a host of non-profits to clean it up. Rick Andrew provides an update to his column last September about testing for microplastic reduction and how those claims can be made with updates to the standards.

2022 will bring continued uncertainty with COVID-19 variants, troubles with hiring and retaining workers, and supply chain difficulties. One thing that is certain is *WC&P International Magazine*. Each month we bring you articles and technical information to help you be the best water treatment professional. As always, we love to hear from you. Drop us an email with your thoughts.

Deborah Stadtler, Publisher

MEET UP WITH WC&P STAFF

- **April 6-8** — WQA Annual Convention & Exposition
  Orlando, FL, USA ..... www.wqa.org/convention

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***POU-POeNews* is getting a facelift, becoming *The Water Source*. You should already have received the first issue. Same great content with a new name. Let us know how you like it.** ♦

North America

EZ-FLO acquistion announced

Reliance Worldwide Corporation (RWC) announced that it has completed its acquisition of EZ-FLO International, a leading manufacturer of plumbing supplies and specialty plumbing products. RWC has made strategic advancements to optimize its product portfolio, deepen its distribution network and continue to strengthen its customer service capabilities. That legacy continues with this acquisition, augmenting its capabilities across product, distribution and manufacturing to better serve customers.

Aqua-Rex representation expanded

Aqua-Rex announced it has partnered with Arrow Sales, Inc. to represent its product in Indiana. Arrow Sales is a focused and driven firm that represents products in the plumbing space for all categories. Indiana is known to have challenging hard water throughout the state and now Arrow Sales will bring a new solution to their clients. Its current line is diverse and matches well with Aqua-Rex, which has units sized to be suitable for single and multi-family homes as well as all types of commercial, hospitality, health care and correctional facilities.

Simmons acquired by Boshart Group

Boshart Group CEO Jeremy Kuepfer announced the acquisition of Simmons Manufacturing, a leading Georgia-based manufacturer of high-quality water well supplies. This acquisition sets the stage for the next season of growth for The Boshart Group and a seamless and successful transition for Simmons and the Engeman family. Simmons will continue to operate as an independent company within The Boshart Group, upholding the same level of commitment to their employees, customers and vendors.

H2O Supply acquired by Winsupply

Winsupply Inc., one of the largest distributors in the nation, has completed the purchase of both H2O Supply locations in Dallas and Fort Worth, TX. The locations will continue to do business as H2O Supply. WinSupply executives said the acquisition is designed to expand its footprint deeper into the south, while continuing to offer amazing services.

Pool & Spa Expo success reported

The 2021 International Pool | Spa | Patio Expo™, co-located with Deck Expo, brought industry professionals (including nearly 350 exhibitors) together in Dallas last November. The main conference education kicked off with keynotes by two icons in the aquatics industry: Dr. Wallace 'J' Nichols and Rowdy Gaines. There were also several networking events, including the Welcome Party at Gilley's Dallas and BBQ Bash in the outdoor Grill + Chill area. By all accounts, the event was a huge success.

Latin America

Water rationing to continue in 2022

According to the *Antigua Observer*, residents are being urged to continue to conserve water amid warnings that rationing of the critical resource will continue into the new year. While Antigua and Barbuda experienced heavy rains in November 2020, which resulted in the replenishing of surface and groundwater, this year has not brought similar supplies, said Ian Lewis, Head of the Water Business Unit at APUA. He explained that 95 percent of water currently being distributed is via RO plants and as such, the company is only producing around six million gallons (22.7 million liters) per day, which has led to continued rationing.

Grand Bahamas clean water restored

The Grand Bahama Utility Company (GBUC) yesterday announced that its $5 million state-of-the art RO plant is now fully operational to provide potable water to the island of Grand Bahama, according to *Eyewitness News Bahamas*. The three-million-gallon (11.3-million-liter) facility has been extensively tested and monitored consistently over 30 days and the utility company has received approval to officially declare island-wide potability. Since Hurricane Dorian's passage, the utility company managed to provide potable water to 70 percent of the island by July 2020.

Europe

Aquacare technology announced

Aquacare and Royal HaskoningDHV have jointly introduced the latest game-changing innovation in the field of phosphate removal and phosphate recovery – BiOPhree® – to the market. This exclusive partnership will initially focus on the household wastewater market in the Netherlands and the United Kingdom and improves water ecology and the recovery of raw materials from wastewater.

Asia

EKKI pumps to the rescue

During a recent significant flooding event in the State of Tamil Nadu (India), pumps and water technology firm EKKI's dewatering solutions supported the affected locations to manage and pump out rainwater rapidly from flooded areas. The company's dewatering solution was selected due to its high efficiency and capacity, as well as its low operating and maintenance costs. EKKI also announced it has teamed up with KPR Institutions to launch the EKKI-KPR International Water Technology Centre (EIWTC), the first of its kind in the Indian pump and water industry.

Grundfos news

Grundfos has signed a memorandum of understanding (MoU) with Singapore Polytechnic (SP) to co-develop energy and water efficient smart solutions that support industries in Singapore in their efforts to be sustainable, through collaboration, talent development and sustainability education. Grundfos also announced that it has been selected by Royal HaskoningDHV as 'Preferred Supplier' to its award-winning Nereda wastewater treatment technology.

DeNora Singapore venture announced

De Nora announced winning one of the largest water disinfection projects in Asia at the Johor River Water Works, the largest water works located in Malaysia. This project will see a ClorTec® 2250 on-site hypochlorite generator replacing the existing liquid chlorine and ammonia systems. In total, De Nora will provide 11 units across all three plants onsite. Each unit will have an electrolyzer capacity of 1020kg/day, exceeding the tender requirements of 900kg/day. WCP

WC&P GLOSSARY OF TERMS

CI	Certified Installer
CIP	clean in place
CWS	Certified Water Specialist
DI	deionization
DBP	disinfection byproduct
EDI	electrodeionization
FRP	fiberglass reinforced plastic
GAC	granulated activated carbon
gpd	gallons per day
gpm	gallons per minute
MF	microfiltration
MWS	Master Water Specialist
NF	nanofiltration
NOM	natural organic matter
OEM	original equipment manufacturer
ORP	oxidation-reduction potential
PE	Professional Engineer
PFAS	Per- and polyfluoroalkyl substances
PLC	programmable logic controller
POE	point of entry
POU	point of use
PVC	polyvinylchloride
RO	reverse osmosis
TOC	total organic carbon
THM	trihalomethane
TDS	total dissolved solids
UF	ultrafiltration
UV	ultraviolet
VFD	variable frequency drive
VOC	volatile organic compounds

ORGANIZATIONS AND ASSOCIATIONS:

ANSI	American National Standards Institute
ASPE	American Society of Plumbing Engineers
AWWA	American Water Works Association
CDC	Centers for Disease Control and Prevention
FDA	US Food and Drug Administration
IAPMO	International Association of Plumbing and Mechanical Officials
IUVA	International Ultraviolet Association
NGWA	National Ground Water Association
NSF	National Sanitation Foundation
US EPA	US Environmental Protection Agency
WQA	Water Quality Association
WQRF	Water Quality Research Foundation

By Amanda Crangle

Seven Water Treatment Marketing Strategies for 2022

As we enter this new year, it feels as though the world is collectively holding its breath. What will 2022 bring? After two years of global uncertainty and the ripple effects of decisions made in early 2020, it's fair to say we all could use a healthy dose of encouragement.

A friend of mine gave a talk at the Eastern Water Quality Association convention last year, where she discussed the difference between internal and external locus of control. She showed us how to move from letting the world dictate our reactions to aligning ourselves with our goals, passion and purpose, thereby determining our own actions which then can change the world. She taught us to be the masters of our own destiny.

Marketing is simply the process of communicating your story, your passion and your solution to people who have a problem you can solve. It's easy to sit and wait for the world (or Google) to hand us those people on s silver platter. We find it much more sustainable, however, to intentionally design a business with the people you serve at the heart of it - both team members and customers. To kick off these strategies for 2022, let's start where all the magic and (sometimes) the mayhem begins - our brain:

#1 Mindset check

Our mind and body are capable of far more than we realize when we don't let the pre-set limitations of other people and our culture shape our reality. In the book, *Mindset* by Carol Dweck, she recounts the following story, "George Danzig was a graduate student in math at Berkely. One day, as usual, he rushed in late to his math class and quickly copied the two homework problems from the blackboard. When he later went home to do them, he found them very difficult and it took him several days of hard work to crack them open and solve them. They turned out not to be homework problems at all. They were two famous math problems that had never been solved." What self-imposed limitations are you placing on yourself, both personally and professionally? What limitations are you placing on your staff or colleagues that, if removed, could free them up to enjoy their work more, stick around longer and better serve your customers?

#2 Culture check

Culture begins with its leadership and we all have the opportunity to lead. While there are plenty of great tips and tactics you can use to improve your company culture, no amount of shiny objects can compensate for poor leadership. I encourage you to take a look at ways you can improve in 2022.

Jim Collins, in his famous book *Good to Great*, describes these qualities as 'Level 5 Leadership' (wonderful principles to work toward):

1. Develop humility: when things go right, give credit to your team.
2. Take responsibility for your and your team's actions: place the blame squarely on your shoulder when things go wrong.
3. Ask for help: recognize and admit your limitations, seeking help from those more experienced than you.
4. Develop discipline: as my friend stated, look at your locus of control and identify how you can be less reactive and more proactive.
5. Find the right people: much easier said than done these days! However, you can build a great team over time with intentionality and patience.
6. Lead with passion: has your company committed to a purpose beyond itself?

#3 Systems check

All systems go! If people are the engine that drives us, systems and processes are the fuel that keeps us going. Take an honest look at your systems and the processes that run them. Are you able to communicate them quickly and effectively? In your marketing and sales, what systems are in place for success? What processes are you using to ensure good communication between your marketing team, sales team, operations and technicians?

Creating and implementing systems and processes directly impacts your team's culture, onboarding efficiency, customer experience and profitability. Just a couple of hours per week of work improving them can yield significant returns in a very short amount of time.

#4 Manage your reputation

With search engines constantly changing their platforms, you may or may not be surprised to know that 45 percent of updates to local search engine results pages (SERPs) were related to reviews.[1] In 2022, you must make it a priority to get more high-quality reviews, respond to those reviews whether they are positive or negative and integrate them into all forms of marketing and sales.

Google has started placing a 'new' tag by recent reviews. If your last review was months ago, your competitors with recent reviews are going to stand out even more. According to a blog by Qualtrics.com, 93 percent of consumers say online reviews influenced their purchase decisions.[2] No amount of money thrown at Google Ads or SEO tactics will drown out limited or old reviews.

Offline, how are you delivering on your promises (your value proposition) at each touchpoint with your customer? From first impressions online to phone calls and in person communication, how are you ensuring your brand image and reputation are being both upheld and improved? The strength of your brand is directly dependent on the aggregate experience of your value proposition.[3]

#5 Leverage technology

Cleon Skousen, in his book *The 5,000 Year Leap*, lays out the argument the culture that birthed the establishment of the United States and was fueled by the US *Constitution* allowed our world to take a 5,000-year leap in innovation, moving ahead more in a century than it had in the previous five millennia. I would like to posit that the innovation currently taking place will further condense a similarly rapid shift into a 5-10 year period. Substantial technological advances like artificial intelligence, 5G and the Metaverse are forever changing us. It's important for us as business owners, managers and team members to try to understand, even at a basic level, what changes are taking place and how we can leverage them to improve our organizations.

If you're using any type of online communication or marketing, you're likely already using artificial intelligence and machine learning. Google's SERPs show listings based on these algorithms and Google Ads is constantly pushing for more automation. Does this mean we should hand the reins over to the bots? Absolutely not. In many tests over the past few years, we found significant reasons why humans still must understand and manage machines. Don't be afraid to experiment with new technologies and see how it works for your business. Just be sure you have the ability to accurately measure performance.

#6 Highlight your humanity

Since the dawn of civilization, people have used storytelling to communicate important information. Somehow, over the years, we've lost touch with this vital ritual. Our marketing has suffered dramatically, in the process. People do business with people - not with websites, landing pages, ads or emails. Even though we are more empowered than ever to communicate with the masses, so many times we opt for a quick text, tweet or ad that rarely showcases our authenticity and expertise.

Here are a few ways you can highlight your humanity in your marketing and sales process:

- Invest in a video that tells the story of your company
- Introduce yourself and your team through your website and social media to customers, prospects and even future employees
- Integrate a personal element through video into your marketing and sale

#7 Delight your customers

What once was novel and exciting is becoming commoditized in this world of quantum change. With thousands of water treatment options, the only significant difference is usually the people behind the product. While you work on humanizing your business, how can you better understand and cater to the needs of the humans you are serving? Asking questions during each customer interaction can help your team discover ways to improve each step in your marketing, sales, installation and service processes. These micro tweaks translate to macro improvements and are far easier to implement and measure.

Speaking of delighting your customers, at a WQA event, I watched a dealer show his process from when someone becomes a new customer to the follow-up after installation. I marveled at their attention to detail and empathy for the customer each step of the way. It's no surprise that this company has thrived over the past few years and their reviews tell story after story of delighted customers raving about their experience.

Conclusion

Remember, while no one knows what the future holds, we can improve how we react to uncertainty and prepare for the future based on what we know today. From our team to yours, Happy New Year!

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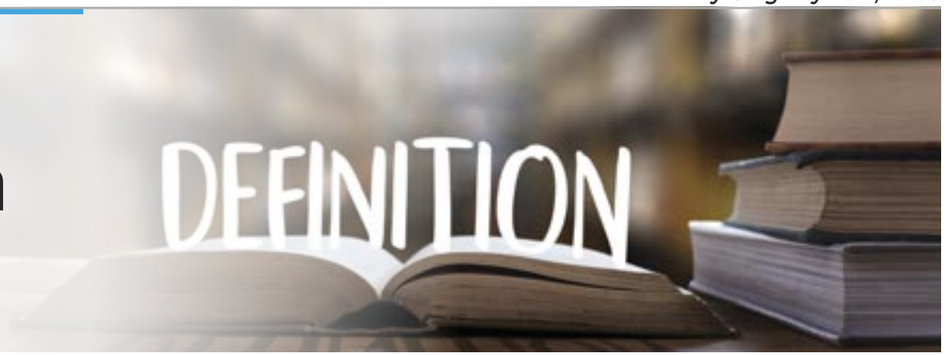
About the author

Amanda Crangle and the team at Lamplight Digital Media help residential and commercial water treatment companies profitably grow their dealerships using digital marketing. They have worked with over 100 water treatment dealerships spanning North America, managed millions of dollars in ad spend and performed over 1,000 scientific website split tests. Crangle intimately knows the water industry, having worked in a dealership as a sales rep and as a general manager. She and her team are passionate about expanding consumer awareness of water quality issues and providing education on final barrier solutions. WCP

By Greg Reyneke, MWS

What's in a Name?



Editor's note: This was first published in WC&P International in February 2020

When I first moved to America I quickly learned that certain words in South Africa mean different things in here. Our cars have boots and bonnets (trunks and hoods), we stop at robots (traffic lights) and we have biscuits (cookies) with our tea. As my career progressed in the water industry, I observed that some people used different terms to convey different meanings and some of those terms are not necessarily accurate. Furthermore, some don't use those terms in a way that benefits the consumer. One of the most contentious and potentially harmful ones that I've observed over my almost three decades in the industry is: water softener. What is a water softener, how does it work and what is *not* a softener?

Hard water is usually called hard because it is hard to lather. So naturally, one would deduce that soft water would be easy to lather. People associate hard-water symptoms with more than just soap interactions, however. To many people, their water is hard because of the hard scale that forms on appliances, faucets and fixtures. To them, soft water must also not form scale.

Over the years, several innovative technologies have been introduced into the marketplace to address various hard-water symptoms, like ion exchange, membrane separation, radio-frequency emitters, magnets, sequestering agents, pH reducers, chelating agents, crystallization media, electrodeionization and many others. Some are only effective at controlling scale and some are effective at helping with both soap and scale. Unfortunately, there are also some that don't seem to be effective at anything.

With everyone's zeal to sell their products to as many people as possible, some sellers choose to call their technologies by names that don't accurately describe them, causing confusion in the marketplace, as well as a lack of consumer confidence in the industry at large. This has become such a contentious issue among some in the industry that the Water Quality Association (WQA) convened a task force specifically to update and clarify its *Glossary of Terms*.

> Just as we consult an English Dictionary to understand English words, WQA's Glossary of Terms is a useful resource in helping to clarify what various industry terms mean.

It means what? A glossary

Just as we consult an *English Dictionary* to understand English words, WQA's *Glossary of Terms* is a useful resource in helping to clarify what various industry terms mean. It defines soft water as "Water which contains less than 1.0 grain per gallon (17.1 milligrams per liter (mg/L) or parts per million (ppm)) of total hardness" and describes a water softener as "A device, product, or equipment that reduces the presence of water hardness to less than 1 gpg expressed as calcium carbonate ($CaCO_3$) equivalent via chemical, physical, or other means.

In residential and commercial applications, the most common water softener consists of a pressurized water treatment device in which hard water is passed through a bed of cation exchange media (either inorganic or synthetic organic) for the purpose of exchanging calcium and magnesium ions for sodium or potassium ions, thus producing a softened water which is more desirable for laundering, bathing and dishwashing.

This cation exchange process was originally called zeolite softening or the Permutit Process. Most modern water softeners use a sulfonated bead form of styrene/divinylbenzene (DVB) cation resin. Distillation, electrodialysis, nanofiltration, deionization and reverse osmosis water treatment systems are also capable of measurably removing calcium and magnesium ions from water and therefore act as water softeners."

The *Glossary of Terms* also defines a saltless (or salt free) water treatment device as "A device, product, or equipment using chemical, physical or any other means, to counteract scale buildup of hard water minerals (calcium and magnesium) without the use of salt for regeneration. Depending on the scale reduction or prevention method, other effects of soft water may also be observed."

These simple clarifications of the differences helps reduce confusion and empowers sellers and buyers to match the appropriate technologies to each desired goal. If it removes the hardness, it is a softener, regardless of how the hardness is removed. If it doesn't remove the hardness, it is not a softener, regardless of how effectively it can control scale.

By Greg Reyneke, MWS

Unethical behavior

Correct usage of appropriate terms when describing our products and services is crucial when teaching our prospective customers. The WQA Board of Directors ratified a change to the industry *Code of Ethics* (effective in 2020) as follows: "Terms and definitions, either written or verbal, shall be used in accordance with established definitions of those terms as published by WQA in the *Knowledge Base Glossary*." This makes it quite clear that deliberately mis-describing something is not only unhelpful, but also unethical in the marketplace.

Doing it right

My team designs, specifies and supports several salt-based and salt-free solutions for homes, business and industry. In some applications, removing water hardness is the goal (softening), but in other applications we only want or need to control the formation of scale. Sometimes we soften using reverse osmosis, sometimes we soften using electrodeionization and we usually soften with high-efficiency, salt-based ion exchange. We've also had good success with various scale-control technologies (like template-assisted crystallization and phosphates), as long as we carefully consider the operating parameters.

It would be foolish of us to use a technology outside of where it will work as desired. No matter how good my phosphate filter is at controlling scale formation, it doesn't do very well at making clothes or dishes cleaner than hard water. I look at it much like choosing a hammer or a screwdriver for a construction fastening project; sometimes one tool is simply better than the other and I like having as many tools available to me as possible. I like to know their relative strengths and weaknesses; most importantly, I like to know what will help serve my customers best for their specific applications. The key to choosing the correct tool is to fully evaluate the overall holistic of the project. Some questions that we ask on every project:

- What concern are we addressing: soap, scale or both?
- What are the consequences of failure?
- Do we have drainage available?
- Do we have electricity available?
- What are our legal discharge limitations?

Based on these questions and a quick review of a recent water sample analysis, it is usually rather simple to select the appropriate tool to use for the job, whether a softener or scale-control device. Customer satisfaction is always our priority and that only happens when we accurately represent the outcome that we intend to deliver. If I were to describe a salt-free, scale-control technology as a salt-free softener, my customers would be very disappointed when their laundry wasn't as clean as expected. This wouldn't be good for the client or my reputation.

Conclusion

Language is important and words have meaning. Let us all use words that convey the true meaning intended, as we work together to improve the lives of all people through better water quality.

About the author

Greg Reyneke has almost three decades of ongoing experience in the management and growth of water treatment dealerships. His expertise spans the full gamut of residential, commercial and industrial water quality management applications. A recipient of the Ray Cross and Regents Awards, Reyneke has been active in the WQA since 2004 and has served on numerous committees and task forces. He is past-President of the Pacific Water Quality Association and serves on the WQA Board of Directors and Board of Governors. Reyneke writes prolifically and travels worldwide, helping to improve human life through better water quality. You can follow him on his blog at www.gregknowswater.com. WCP

People

New IUVA officers named

Jennifer Osgood, PE, PMP, BCEE, VP-Delivery Leader at CDM Smith, has recently been appointed President of the International Ultraviolet Association (IUVA). In addition, IUVA has elected **Ted Mao, PhD**, to serve as incoming President for a two year-term beginning in 2023. He is Chief Technology Officer, Evercloak, with over 20 years of experience in UV-C technologies. New Board members include: **Troy E. Cowan,** Owner and Founder of Vision Based Consulting, LLC, and Chair of the IUVA Healthcare initiative; **Dr. Wenjun Sun,** associate professor at Tsinghua University, China and **Erik Swenson,** General Manager for Nichia America Corporation.

WWEMA awards and board announced

Water and Wastewater Equipment Manufacturers Association (WWEMA) Chairman John Collins and the 2021 Board of Directors Chairman, named Henk-Jan van Ettekoven (President, HUBER Technology, Inc.) the recipient of the 2021 James C. Morriss Member Achievement Award for significant contributions to the mission of the Association and to the overall benefit of the water and wastewater industry. WWEMA members elected new officers and directors during the Annual Meeting. The 2022 Executive Committee includes Chairman **Vince Baldasare**, Gorman-Rupp Company; Chair-Elect **Diane Meyer**, Val-Matic Valve and Manufacturing Corporation; Vice-Chairman **William 'Bill' Decker**, Equipment Services Group, Aqua-Aerobic Systems, Inc.; Treasurer **van Ettekoven**; Immediate Past Chairman **John Collins**, JCM Industries, Inc. and **Jay Conroy**, Hydro-Dyne Engineering, Inc., appointed as Assistant Treasurer. Three members were newly elected to the WWEMA 2022 Board of Directors: **Ron Dollar**, WRT LLC; **Robert Jeyaseelan,** Vapex Environmental Technologies, LLC and **Chris Thomson**, Sensus, a Xylem brand. van Ettekoven was re-elected to serve a second three-year term.

Jancik named IDE CEO

IDE Water Technologies announced it has appointed seasoned water professional Iris Jancik as its new CEO of IDE Americas. As CEO of IDE Americas, she will draw on her years of managerial and engineering experience in the water industry to drive IDE's growth strategy in the North and Central American markets. Jancik worked closely with IDE engineering and operations teams when she previously served as a project manager for the construction of Sorek A, the largest desalination plant of its kind in the world.

Levinson Appointed PHTA 2022 Chairman

The Pool & Hot Tub Alliance announced that Andy Levinson was appointed chairman of the Board for 2022. He has been a member of the Pool Corp executive team since October 2020. Prior to that, Levinson was President of Jet Line Products. He is highly active in the pool and hot tub industry and has held several leadership roles, including President and former board of director member of the Northeast Spa and Pool Association and Past President of the Long Island Pool and Spa Association. PHTA also announced its board members for 2022, including Chair Elect: **Charlie Claffey**; Secretary: **Donna Williams**; Treasurer: **Scott Frost** and Past Chairman: **Franceen Gonzales**. PHTA's Board Members at Large include: **Bob Blanda**; **Rob Butcher**; **Chris Curcio**; **Keith Harbeck**; **Joseph Laurino, PhD**; **Albert Miller**; **James Mock** and **Kevin Post**.

Upcoming Events

Highlighted listings denote WC&P attendance or distribution (subject to change)

January 2022

17-20 **Mid-America Pool, Spa and Outdoor Living Show**
Indianapolis, IN, USA
http://www.midampool.com/index.php/education

25-27 **National Association of Wholesalers Executive Summit**
Washington, DC, USA
https://www.naw.org/es22/

26-27 **Smart Water Utilities Europe 2022**
Amsterdam, the Netherlands
https://www.smart-water-utilities.com/

February 2022

21-25 **AMTA Membrane Technology Conference (MTC22)**
Las Vegas, NV, USA
https://www.awwa.org/Events-Education/Events-Calendar

24-26 **32nd Annual Berkeley Springs International Water Tasting**
Berkeley Springs, WV, USA www.berkeleyspringswatertasting.com

March 2022

1-4 **Introduction to Spunbond and Meltblown Technology**
Raleigh, NC, USA
https://www.inda.org/training/advanced-training.php

8-10 **FILTECH 2022**
Cologne, Germany
https://filtech.de/

11 **World Plumbing Day**
https://www.worldplumbing.org/world-plumbingday/

22 **CIPH Gala In Support Of Habitat For Humanity**
Toronto, ON, Canada
https://www.ciph.com/events/EventDetails.aspx?id=1569464&group=

22 **World Water Day**
https://www.worldwaterday.org/

29-31 **FiltXPO® International Filtration/Separation Exhibition & Technical Conference**
Miami Beach, FL, USA
https://www.filtxpo.com/

April 2022

6-8 **WQA Annual Convention & Exposition**
Orlando, FL, USA
www.wqa.org/convention

11-14 **National Water Safety Conference**
Fort Worth, TX, USA
https://watersafetyconference.com/

17-21 **Singapore International Water Week 2022 Virtual**
www.siww.com.sg/

May 2022

10-11 **Emerging Water Technology Symposium**
San Antonio, TX, USA
https://ewts.org/

16-18 **Global Water Summit**
Madrid, Spain
www.watermeetsmoney.com/

29-Jun 2 **IDA 2022 World Congress**
Sydney, Australia
https://wc.idadesal.org/

June 2022

8-10 **Aquatech China**
Shanghai, PR China
https://www.aquatechtrade.com/china/

12-15 **AWWA Annual Convention & Exposition (ACE22)**
San Antonio, TX, USA
https://www.awwa.org

July 2022

12-14 **AMTA/SEDA Workshop: PFAS and Emerging Contaminant Rejection by Membranes**
Durham, NC, USA
https://www.amtaorg.com/event/amta-technology-transfer-workshop-durham-nc-april-27-29-2021

August 2022

23-25 **THE WATER EXPO 2022 11th Edition**
Miami, FL, USA
https://www.thewaterexpo.com/

September 2022

6-8 **Aquatech Mexico**
Mexico City, Mexico
https://www.aquatechtrade.com/mexico/

11-15 **IAPMO 93rd Annual Education and Business Conference**
Charlotte, NC, USA
https://www.iapmo.org/ibu/events

11-22 **IWA World Water Congress & Exhibition**
POSTPONED FROM 2021
Copenhagen, Denmark
https://worldwatercongress.org/

12-16 **drinktec 2022**
Munich, Germany
https://www.drinktec.com/index.html

13-15 **WQA Mid-year Leadership Conference-trade-show**
Olympic Valley (Lake Tahoe), CA, USA
https://mylc.wqa.org/

14-16 **ASEAN Sustainable Energy Week 2022 (ASEW)**
Bangkok, Thailand
https://www.asew-expo.com/2021/en/index.asp

27-28 **Canadian Hydronics Conference**
Saskatoon, Saskatchewan
https://www.ciph.com/page/CHC2021

October 2022

5-7 **INDOWATER 2022: 16th International Water, Wastewater & Recycling Technology Expo & Forum**
Jakarta, Indonesia
https://indowater.merebo.com/

10-13 **PWQA 65th Annual Trade Show & Convention**
Location TBD
https://pwqa.com/

15 **Global Handwashing Day**
https://globalhandwashing.org/global-handwashing-day/

18-20 **Aqua Ukraine 2022**
Kiev, Ukraine
https://www.iec-expo.com.ua/en/aquaen-2022.html

November 2022

19 **UN World Toilet Day**
https://www.un.org/en/observances/toilet-day
WCP

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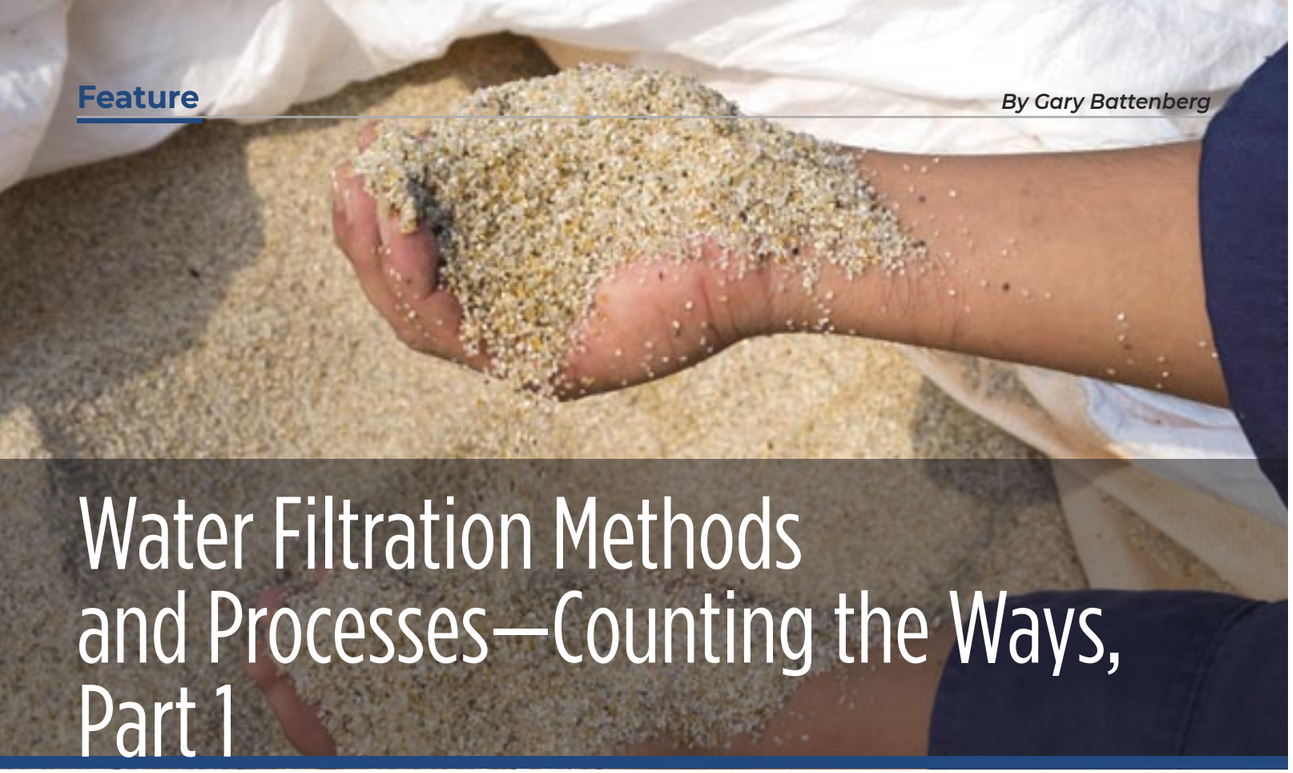

Water Filtration Methods and Processes—Counting the Ways, Part 1

What is Filtration?

By definition, *'filtration is that process whereby fluid passes through a porous substance to remove or separate solid particulates, sediments, turbidity, colloids, impurities, taste, odor, color, iron, algae and microorganisms including viruses, bacteria and cysts.'* Filters range from coarse gravel, sand and charcoal type to felt bag filters. Loose media loaded in pressure vessels with automatic or manual controls for backwashing or regenerating media that function as adsorptive, neutralizing, oxidizing and catalytic processes are the most common types currently in use. Filters may also include media packed in cartridges for smaller applications and/or specially prepared cartridges that target specific contaminants such as lead, arsenic and other emerging contaminants of concern.

A brief history of early filtration

Filtration occurs in nature by clarifying turbid water as it seeps or flows through earthen layers on its way to underground aquifers, streams or pools, sometimes referred to as a freshwater lens. Early Egyptian, Chinese, Greek, Roman, Persian and other ancient cultures all understood the need to filter water to improve the clarity and aesthetics of water, before boiling it to ensure it was safe for drinking and cooking. The first filter patent was issued in 1790 and credited to Mrs. Johanna Hempel[1] in England for drinking water, which was constructed of pottery containing four parts tobacco pipe clay and mixed with five parts of sea, river or drift sand for what we know as a gravity filter. Robert Thom, a Scottish civil engineer, invented and received a patent for his slow-sand filtration process in 1827.[2]

Two years later, civil engineer John Simpson developed a similar filter, which was installed and commissioned at the Chelsea Public Water works in London. His system was subsequently adopted for use around the world. This process produced potable water by using the naturally occurring complex biological film (biofilm) that grows on the surface of the sand substrate. In 1885, the first slow-sand filtration was installed in the United States and by 1900, there were 10 operating systems in the US. Since that time, municipal water utilities have adopted more modern methods for treating large volumes of water (which include aeration, coagulation and flocculation, precipitation, chlorination and other disinfection processes) to produce potable water deemed safe for drinking, cooking and oral hygiene.

Types of filters

In this part of the series, we will look at methods for removing sand and large particulates from municipal, public and/or private groundwater sources. This first step is crucial because if sand and grit are not removed from the water, the collateral damage to virtually all water related fixtures and appliances could result in unexpected repair or replacement costs. There are cases where sand, sediment and large particulates enter the service plumbing of a residence or commercial building due to several factors. Examples of this include water main breaks where rocks, gravel, dirt and sand enter the water lines prior to and during repair. After repairs are completed, the water main(s) is/are flushed to purge these conditions until the water is clear and detectable chlorine is present.

Other instances include smaller community of mutual domestic water systems drawing water from surface sources or shallow ground water wells. Turbidity is typically the most common aesthetic inconvenience, especially where water is drawn from a surface water source. Sand and gravel migration from groundwater sources may be caused by a failing gravel pack in a well or sand may become present after a subterranean seismic event such as an earthquake or tremor that fractures the earth strata.

Many municipal and public water utilities across our nation still have black iron water pipe infrastructure in use. These systems regularly notify their customers of flushing water mains to clear settled sediments out of the distribution system. After flushing is completed, customers are counseled to open an outside hose bib and run the water until it is clear to make sure any sediments or particulates do not migrate into the service plumbing. Despite this process, there are times when large particles and even small pebble-size deposits break loose from the piping and migrate to the aerators of the fixtures and reduce water flow. This is even possible where the residence or commercial building is serviced by a water well. In other cases, sediment or large particulates may enter the piping infrastructure because of a water main break. After repairs are made, the utility personnel do their best to flush away and transient sediments or heavy solids by flushing through nearby fire hydrants to eliminate migration to the service connections of residential or commercial buildings.

Sand separators and sediment traps

Some ground waters will yield sand, which ideally should be addressed when the well is jetted and flow tested. If the well produces sand after it is stabilized, the driller will usually recommend a pump-mounted sand separator. Pump-mounted separators are designed to remove sand and grit that is destructive to submersible or turbine water pumps. The centrifugal action prevents sand from entering the pump inlet by spinning or 'tossing' the sand to the perimeter of the separation chamber where it discharges out the bottom and back into the well. Sand-free water enters the low-pressure area of the separator and flows up to the pump inlet, thereby protecting the impellers, bearings and other parts of the pump rotating assembly. Dropping the sand back into the well helps slow or even stop sand intrusion into the well.

Sediment traps have been in use before the advent of the centrifugal or cyclone/cyclonic separator. The typical sediment trap for removal of fine sand and abrasive sediments consisted of a galvanized tank with three ports, including the inlet, outlet and flush or blowdown port. The tanks were typically 12-16-inch diameter X 36- 48 inches high (30.48-40.64 cm X 91.44-121.92 cm).

Sediment-laden water enters the tank in the lower one-third of the sideshell, with an elbow rotated upward at 22°, creating a spiral vortex that allows the sand and heavy sediment to settle out of solution to the bottom of the tank. Clarified water exits the top of the tank sideshell and into the service plumbing (or additional pretreatment such as a cartridge filter or automatic

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backwash sediment filter to remove lighter sediments that remained in suspension). The flush valve at the bottom (commonly referred to as the blowdown valve) is opened weekly either manually or automatically with a timer and solenoid to purge the trap of collected sand and sediment.

Sediment traps require a much larger footprint versus the cyclone separator, which is very compact and is typically mounted to the wall for either submersible or jet pump installations thereby reducing the overall treatment footprint. It is very important to properly size a cyclonic separator based on the pump rate. Too often, the separator is selected based on pipe size and not flow-rate. Typically (but not always) the cyclone separator is sized smaller than the main waterline. For example, where the main water pipe is 0.75-inch (1.90-cm) diameter, the separator will typically be selected with 0.5-inch (1.27-cm) ports because of the available pump rate on the well. Cyclonic separators work best when the flow velocity is optimized to force the solids to the outer perimeter of the separation chamber quickly for high efficiency and cleaner effluent water. Always use the sizing/selection chart to avoid oversizing the cyclone type separator.

Screen filters

Screen filters may be used and are recommended where plumbing code compliance requires installation when water pressure exceeds 80psi. Screen filters range in size and configuration depending on needs. The basic screen filter requires turning off the water to remove and clean the screen when debris is captured. Others are self-cleaning and require manually opening a flush valve or will clean automatically with an electronically controlled valve.

In areas where groundwater tables are just below the surface, quality sometimes is affected by heavy rains or storm runoff because of a shallow activity zone typically in sandy soil areas. Sand and grit may be present in these areas shortly after these rain events and many residences have screen filter devices like the spin-down type that are easily purged via a flush valve mounted at the base of the housing. This feature makes cleaning simple without having to turn off the water supply, especially with the clear housing that provides visual confirmation of sand or grit capture and a quick purge flush away of the solids.

Conclusion

This first crucial step is something to be aware of during the initial call to a prospective customer who is experiencing these kinds of problems. Listening to what the customer has to say about their problems and water quality concerns is very important so that no real or potential issues are overlooked. Accurate assessment of the water aesthetics combined with a complete water analysis and hydraulic characteristics of the water source will ensure competent treatment options may be presented to the customer. In Part 2, we will look the finer points of filtration and the options that are available to remediate sediment and color issues. Stay tuned.

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About the author

Gary Battenberg is a Business Development Manager-Senior for Argonide Corporation. Previously, he was Technical Manager, Water Treatment Department of Dan Wood Company. Prior to that, Battenberg was Technical Support and Systems Design Specialist with Parker Hannifin Corporation. His nearly four decades of experience in the water industry include a proven, successful track record in areas of sales, service, design and manufacturing of water treatment systems. Battenberg's technology base covers mechanical and adsorptive filtration, ion exchange, UV sterilization, RO and ozone technologies. He has worked in the domestic, commercial, industrial, high-purity and sterile water treatment arenas. A contributing author to WC&P International magazine and a member of its Technical Review Committee since 2008, Battenberg was voted one of the magazine's Top 50 most influential people in the water treatment industry in 2009. He can be reached by email at gary@argonide.com or by phone (407) 488-7203.

By Sam Lodge

All Eyes on PFAS: Regulators Focus in on Forever Chemicals in Drinking

Every five years, US EPA begins a cycle to update the *UCMR*,[1] the *Unregulated Contaminant Monitoring Rule*. This process, borne out of the *Safe Drinking Water Act (SDWA)*, determines the list of new chemical contaminants that public water utility systems in the US have to monitor for the next five years—in other words, a list of new things to which water testers, water purifiers and water drinkers, need to be paying attention.

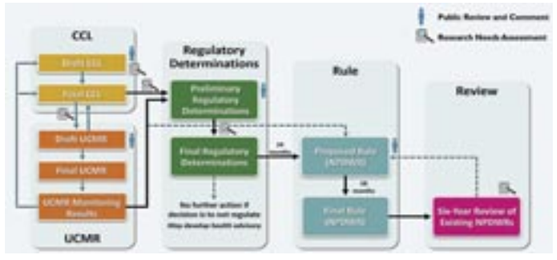

Figure 1. US EPA flowchart on the *UCMR* process.

This process is one of a growing list of federal government initiatives that investigate the health risks of emerging compounds in the American water supply. The chemical group increasingly making up the lion's share of US EPA's Contaminant Candidate List (CCL) are a class of so-called forever chemicals—known scientifically as per-and polyfluoroalkyl substances or PFAS—that pose a health risk to humans and has an extremely long half-life in the environment, accumulating in water, air, fish, soil, even in deer and in humans.

The *UCMR*'s fourth cycle (also known as *UCMR 4*) wound down at the end of 2020, with announcements this year from US EPA listing the 30 currently unregulated contaminants it plans to monitor and study for the next five years. While *UCMR 3*[2] included six PFAS chemicals in its CCL of 30 chemicals to monitor, this year's *UCMR 5*[3] has listed 29 PFAS compounds—out of the maximum of 30 chemicals that US EPA can list. That all but one chemical—lithium—listed belong to the same class is unprecedented in the history of the *UCMR*, highlighting the importance of monitoring these increasingly ubiquitous chemicals in our environment.

In recent years, there have been several new methods developed to identify and isolate these compounds at much lower levels than we've been able to test before. Meanwhile, new research is emerging about ways to destroy PFAS in the environment, as well as new PFAS alternatives. It's clear that if we can do more to test, study, mitigate and ultimately eliminate the introduction of new PFAS, while we find ways to remove PFAS from public resources, we may be able to envision a new horizon for safety in water.

Testing: knowing the scope of the problem

Understanding where PFAS is appearing in the environment and its organisms—and tracking how exactly PFAS infects our water supply—are the first steps towards comprehending how big of a problem we have on our hands. Since the *UCMR 3* ended almost nine years ago, the amount of information about the extent of PFAS contamination in water supplies has increased dramatically. So far, PFAS testing in industrial, military and academic settings has found this group of chemical compounds everywhere—including widespread occurence in rainwater and detectable in all major water supplies in the US.[4] A 2015 report by the Centers for Disease Control and Prevention's *National Health and Nutrition Examination Survey (NHANES)* found PFAS in the blood of 97 percent of Americans.[5]

These insights emerged from the rapidly-accelerating field of PFAS analysis, driven by innovations in the methods and consumables we use to monitor and understand these compounds: PFAS testers now have new analytical processes applicable to a growing list of analytes,technology with increased sensitivity to detect PFAS in challenging new environmental matrices, including soil, wastewater and food, as well as significant new workflow improvements, which offer more rapid analysis coupled with higher accuracy and precision, leading to greater laboratory productivity.

US EPA requires labs monitoring PFAS in drinking water to perform solid phase extraction (SPE) to prepare a sample, followed by LC-MS/MS (liquid chromatography/ tandem mass spectrometry) analysis.[6] Recent advances have made SPE more efficient and more versatile. This sample preparation technique allows scientists to effectively clean up and concentrate samples prior to high performance liquid chromatography (HPLC) or gas chromatography (GC) analysis, giving scientists the ability to selectively target analytes of interest, work with a wide range of sample volumes and can be easily automated for high-throughput analysis. In the end, these innovations are giving labs higher-quality, more reliable results on PFAS in the US water supply.

In addition to innovations within the industry, federal agencies have also stepped up to test, measure and study PFAS in the environment. The recently-passed bipartisan infrastructure bill additionally delivers more than $10 billion to address contaminants in drinking water, with PFAS occupying a central focus. In October 2021, US EPA announced a National PFAS Testing Strategy[7] that envisions new requirements on PFAS manufacturers, compelling them to provide the agency with toxicity data to better inform future regulatory efforts. According to the agency, the majority of PFAS currently in commerce has limited or no toxicity data, meaning widespread testing of PFAS by manufacturers would provide US EPA and other researchers with a much more comprehensive dataset.

New regulatory landscape

Scientific studies have indicated a number of worrying human health effects linked to the exposure to PFAS. They have been shown to increase the risk of cancer,[8] disrupt the development of a healthy fetus[9] and reduce the effectiveness of vaccines.[10] Biomonitoring studies by the Centers for Disease Control and Prevention (CDC) show that the blood of nearly all Americans is contaminated with PFAS.[11] Meanwhile, more than 600 PFAS compounds are still in industrial use,[12] involved in everything from coating textiles, paper products and cookware to formulating some firefighting foams and being used in aerospace, aviation, photographic imaging, semiconductor, electronics, automotive and construction companies.

Testing for PFAS has occupied the lion's share of regulatory requirements for water utility systems, though the regulatory landscape is quickly evolving. Five years ago, US EPA issued a non-enforceable lifetime health advisory for PFOA and PFOS in drinking water of 70 ppt, though independent scientists have recommended a safe level for PFAS in drinking water of 1 ppt. Recent federal actions related to PFAS expand the scope and introduce stricter standards for PFAS regulation – for water, US EPA has announced plans for a national primary drinking water standard for PFOA and PFOS by fall of 2022 with the aim to finalize enforceable limits by the fall of 2023.[13]

In October 2021, US EPA Administrator Regan launched the PFAS Strategic Roadmap,[14] a commitment on actions to, "Control PFAS at its sources, hold polluters accountable, ensure science-based decision making, and address the impacts on disadvantaged communities."[15]. In early October, the agency announced an upcoming petition[16] that would allow the agency to designate PFAS compounds as 'hazardous constituents' under the *Resource Conservation and Recovery Act (RCRA)*, allowing for *RCRA* corrective action against heavily contaminated treatment, storage and disposal facilities, an onerous process with a stringent timeline and inflexible performance standards. It also is a necessary first step in PFAS compounds being considered hazardous waste and being handled as such.

In advance of federal regulations, states have stepped in to set legal limits or guidelines for PFAS in drinking water, including New Jersey, New York, Connecticut, California, Massachusetts, Michigan, Minnesota, New Hampshire, North Carolina and Vermont. In late November, Pennsylvania[17] became the latest state to pass maximum contaminant levels for PFAS contamination and pollution at 14 ppt for PFOA and 18 ppt for PFOS, much more strict than US EPA's current Health Advisory Level (HAL) for PFAS at 70 ppt.

Envisioning a path forward

Experts doubt we can realistically eliminate all PFAS use in the short-term, simply because of the compound's utility in resisting oil, heat and water. Firefighting foam known as aqueous film forming foams (AFFF) used to put out jet fuel fires at airports, for instance, requires PFAS to serve as surfactants, effectively distributing the foam across a highly flammable liquid fire, cooling and suppressing it. Despite its utility, AFFF is one of the most prolific contributors to PFAS in California's water supply.

Figure 2. Scientist collecting samples.

In charting a path forward that retains some of the modern comforts we've grown used to (like non-stick pans, water-repellent hiking gear and stain-resistant fabrics and carpets), we must find a way to limit the introduction of new PFAS into the environment while simultaneously embarking on three key directives: searching for safer PFAS alternatives, studying new ways to break down PFAS in the environment and moving to restrict the use of PFAS when we have no other option. In the case of firefighting foam, the Federal Aviation Authority (FAA) has announced a new research effort to find a PFAS-free alternative, while also exploring technologies that can limit the PFAS discharges in the

testing of firefighting equipment, both of which could bring about crucial innovations that could greatly contain our PFAS problem.

Even more promising, scientists are finding that PFAS can achieve near-complete destruction when oxidized in extremely pressurized, heated water–a state referred to as supercritical.[18] For now, however, the process has only been tested with a small number of PFAS compounds at small sites. Heating up and pressurizing water to supercritical levels, after all, requires inordinate amounts of energy at a large scale–but it offers new clues for researchers and a potential future lifeline for small water utility systems.

Conclusion

There was a moment wherein PFAS contamination seemed like a trade-off to modern life. The non-stick pans made for easy clean up, the airplanes ferried us wherever we'd like to go. But increasingly, the industry and its regulators are pouring money and attention towards a future without PFAS contamination, a future in which our tests return fewer and fewer PFAS parts-per-trillion. We can only hope for their success.

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About the author

Sam Lodge is the Phenomenex Senior Business Development Manager for the Environmental industry. He has served in many roles over his 28 years at Phenomenex, with the last four focused extensively on work with commercial and government labs that are developing and improving PFAS analytical methods. Lodge was instrumental in the collaborations that led to the development of several new SPE formats for PFAS, including stacked tubes and pass through GCB cartridges that can help commercial labs to increase productivity and reduce costs.

About the company

Phenomenex is a global technology leader committed to developing novel analytical chemistry solutions that solve the separation and purification challenges of researchers in industrial, clinical research, government and academic laboratories. From drug discovery and pharmaceutical development to food safety and environmental analysis, Phenomenex chromatography solutions accelerate science and help researchers improve global health and well-being. For more information please visit www.phenomenex.com and follow the company's blog at www.scienceunfiltered.com.

WC&P Editorial Guidelines

Guidelines for Submitting an Article to *WC&P* Magazine

WC&P readers are, for the most part, water treatment specialists, dealers, suppliers, manufacturers (and their representatives) in the residential, smaller commercial and light industrial markets, although the latter are somewhat in the minority. Readers depend on the technical merit of *WC&P* articles and know the science is peer-reviewed by industry professionals to ensure accuracy of the information presented.

WC&P only accepts original, exclusive material to present science-based technical articles and relevant case histories, not advertorials. In the interests of objectivity, corporate, trade and product names should not be included in the body of articles. (Any such references will be removed, as will testimonial-type quotes.). At the end of each article, About the author includes a brief biography and full contact information for the bylined individual(s); About the company and/or About the technology/product identify proprietary products and technologies that were discussed in the article. Each section should be no more than 75 words and should include email and/or website addresses to allow readers to reach out to the authors and their companies without delay.

Articles of 1,000 to 1,500 words are preferred. Longer works are routinely accepted, however, as they can be presented in installments. If your technology or application is best explained in a larger treatise, by all means do so. Special formatting (fonts, spacing, etc.) should NOT be used as it will be stripped in the editing process. Times New Roman 12-point font is preferred. Web links are useless in the print medium, therefore, they should not be embedded. If you include links, they should be manually entered; our software will automatically detect links for the digital versions of the magazine.

Charts, test data, photos, schematics and graphs—all enhance the article. Image files should be 300 ppi or greater, preferably in JPG or PDF formats (EPS and TIFF formats are also acceptable). Submit graphics separately rather than embedded in the article. No more than six per article can be accommodated. Graphic placement is based on layout parameters and as such, may not be the same as what is indicated in the text. Relevant references should be made within the text (see Figure 1, Chart 1, Table 1, etc.) for each graphic and each graphic captioned appropriately. Correct attribution must be included for all graphics that are not original to the author or the author's company.

Upon submission, articles are edited for spelling, grammar and *WC&P*'s editorial style requirements, then sent to the Technical Review Committee, a panel of industry experts who vet each and every technical article. *WC&P* also requires that a completed and signed author's agreement accompany all submissions to guarantee the exclusivity of the article. Comments and suggestions by committee members are related to the content of the article and not the author. In most instances, the reviewers may have no knowledge of the author. Their critique is given solely to enhance the understandability and integrity of the paper. When the review process is completed, the article will be returned to the author for comment, corrections and final approval.

If you have any questions, please do not hesitate to contact Executive Editor Denise Roberts at (530) 827-2950 or via email, droberts@wcponline.com

By Emma H. Peterson

The Aquathin Army

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What started in 1980 as a laboratory business, focusing on one water purification system in a 900-square-foot building, developed into one of the most popular names in the water treatment industry. With seven patents, more than 70 proprietary and trademarked devices for markets around the globe and an honorable reputation, Aquathin Corporation has created an empire for success that is widely recognized, but it won't stop there. "We have more accomplishments, honors, achievements, awards and certifications than any other company in the industry," said Alfred 'Alfie' Lipshultz, the Co-founder, President and CEO of Aquathin.

The company is a recipient of both the prestigious President's Excellence & E Star Award in Export from the US Commerce Department and the nation's Blue Chip Enterprise Award from the US Chamber of Commerce. Of the nine major markets within the water treatment industry, Aquathin covers seven of them. From water softening to filtration to purification, the company provides a versatility to dealers and consumers that can't be found anywhere else with its expertise in a variety of markets.

"I can't remember life before Aquathin!" Lipshultz said. "My father was an entrepreneur. He never raised a 'family,' he always raised a corporation." Lipshultz and his siblings grew up working at all his businesses. When he was in college, his father had the idea to manufacture an ice vending machine that wouldn't require constant maintenance or ice be touched by human hands constantly. The problem was, these machines would get backed up from the different water qualities of the ice.

"I had a background in biology, chemistry and mathematics, so he asked for help and I told him to put a filter on it," Lipshultz said. "It didn't work, so we started looking at the elements of the water that might be causing the problem." From this inspiration stemmed the manufacture of his first purification process system. At this time, RO was just coming onto the scene, but it had a lot of flaws, so Lipshultz continued his momentum and started Aquathin in 1980. All they knew was that they were determined to make the most effective water purification system available.

After more than '40 Years of Pure Excellence,' Aquathin is still more determined than ever to offer its serious dedication to health. Aquathin is a US-EPA registered manufacturer, *ISO9001:2015* quality certified and IAPMO platinum-certified company, based in a 25,000-square-foot building in Pompano Beach, Florida, serving all domestic, international, commercial, residential, industrial and laboratory markets. In addition, the company has also received the ISO Quality Certificate and has been awarded the best water purification system in both the UK and USA. Its dealers have brought in hundreds of thousands of customers, making the client list more impressive and the Aquathin Army stronger each day.

One of the company's many feats includes its highly renowned Aquathin University training program. Started about five years into Aquathin's conception, this was before WQA or IBWA offered any education or training. "Back then, even when we were only making a handful of different models, 95 percent of the problems we encountered were field-induced," Lipshultz said. "We decided to raise the caliber of the dealers out there. We invited these people to our facilities from all over the world and dealers sent over new technicians. We will take anybody that wants to be in the industry and in three days, turn them into a water professional that anybody would be pleased to employ." This training allowed dealers to provide solutions to all water problems experienced in the various markets Aquathin serves. Lipshultz had first heard of this inside training concept from Burger King University and he thought it was a great concept.

As Aquathin University boomed in popularity and esteem, Lipshultz developed a road-show version that took training across the states and overseas into the UK. This became a huge success, especially since the road show program was directed more towards the specific market they went to, making it more efficient and applicable to those regions. "Trade journals are shrinking and more businesses are leaving than remain, so a lot of companies are marketing to the science-ignorant or starved person through the Internet, which is not good for the consumer. These systems make no claims, they have no certifications, they're trying to sell systems for a couple hundred dollars off shelves and the consumers don't know! We need an educated person to help educate consumers," Lipshultz said.

Recently, Lipshultz has been involved in the podcast world, making quarterly videos on *Health Quest*. "I've known the gentleman who has done them for five years. He had never done one about water, so we started that," Lipshultz said. The podcast helps people understand the science behind health and the episodes on water that Lipshultz contributes to give detailed insight to the importance of purified water.

On a similar subject, Lipshultz also released an article in 2008 (*Legally Safe and Totally Safe are Two Different Addresses–Where Do You Want to Live?*) that gained a lot of traction to help consumers understand the definition of pure water. "There really isn't a single definition of pure water. Laboratories have multiple definitions. Municipalities have the 1974 *Clean Water Act*, but that only has 91 contaminants in it, but there are over 10,000 in the world known to be in water," Lipshultz said. "Many are being changed to have lower MCLs. There's legally safe water, which is the *Act*, and then totally safe water, which you can get for yourself."

In that article, Lipshultz explains the dilemmas worldwide of emerging contaminants and the shortcomings of health standards by large organizations. His biggest goal is to make the public aware of these risks and learn about what they can do. "The consumer knows that they want two parts hydrogen and one part oxygen and nothing else. My article helps define what is the meaning of truly pure water that the WHO and other organizations may not get totally accurate," he said.

Lipshultz is excited to watch how Aquathin will continue to cultivate in the future. With healthy drinking water diminishing and the lack of education with many consumers, complications are imminent, but after thriving despite a national and global economic crisis and the COVID-19 pandemic, Lipshultz is confident in his company and is proud of its contributions to a healthier, more sustainable tomorrow. After all, Aquathin's mission is "To Improve the Quality of Life, by Providing the Service of Better Water Through Supreme State of the Art and Trend Setting Technologies."

About the author

Emma H. Peterson, author of WC&P International's corporate and dealer profile series, is a student at the University of Arizona, majoring in journalism, with a minor in natural resources. Throughout her college experience, she has developed a following for her photography and photojournalism endeavors. After graduation, Peterson intends to broadly expand her creative/feature writing and photography prospects, as well as pursue her personal interests in skiing and rock climbing. WCP

By Rick Andrew

Update on Microplastics Reduction Claims

In September 2021, in this column, I described an initiative of the NSF Joint Committee on Drinking Water Treatment Units to develop requirements and a testing protocol for POU and POE devices for the reduction of microplastics in drinking water. The column summarized the work of a task group to first define the term microplastics, especially the size of the plastic particles falling under consideration as microplastics.

The task group reviewed available information such as academic research and other studies regarding microplastic contamination in water, analyzed the information and arrived at definition of microplastics as particles of plastic having a size in the range of 1 µm to 5,000 µm. Based on this definition, the task group concluded that the *NSF/ANSI 42* nominal particulate Class I reduction claim could serve as an appropriate measure for effectiveness in reduction of microplastics, because the test for this claim requires a test particle size range from 0-80 µm, with the reduction claim based specifically on reduction of only the 0.5µm- to 1µm-sized particles present in the challenge.

The test also evaluates the ability of the system to effectively filter particles when it is new and no filter cake has built up, as well as when the system has become significantly caked and the filter is clogged, even as the flow is rapidly cycled on after a rest period and the seals in the filter system are stressed. Essentially, the task group concluded, based on the relative size range of the particles involved and the rigorous nature of the test protocol itself, filtration systems capable of meeting the requirements for nominal particulate reduction, Class I would effectively reduce the plastic particles defined as microplastics.

The task group then took this conclusion and developed language to modify *NSF/ANSI 401* to refer to *NSF/ANSI 42* for the testing method and requirement, with the microplastics reduction claim itself being added to *NSF/ANSI 401*. The selection of *NSF/ANSI 401* instead of *NSF/ANSI 42* to house the microplastics reduction claim is because of the current status of microplastics as an emerging compound or incidental contaminant, consistent with the scope of *NSF/ANSI 401 NSF/ANSI 42*, which on the other hand, addresses claims of treatment of aesthetic contaminants that may impact the taste, odor or appearance of the water. Microplastics are not visible and have no taste or odor, thus making *NSF/ANSI 401* the clear choice as the standard to include the microplastics reduction claim.

Status update

At the time the column was written, a ballot prepared by the task group was out for consideration and voting by the Joint Committee. Since then, the voting period has ended with 100-percent affirmative votes cast. Based on that successful result, the proposal was then brought to the NSF Council of Public Health Consultants for ultimate ratification as a last step before being adopted into *NSF/ANSI 401*. The NSF Council of Public Health Consultants has also completed their review and voting period, and has approved the proposal

Next steps

An updated version of *NSF/ANSI 401*, which will include these requirements for claims of microplastic reduction, was scheduled to be published in December. With publishing of the updated standard, the microplastics reduction claim becomes official and becomes available for conformity assessment, including third-party certifications.

Manufacturers with products that are currently third-party certified for nominal particulate reduction, Class I, can leverage this new microplastics reduction claim by liaising with their certification body and taking the necessary steps to fully conform with the requirements. These steps will include updating product documentation and literature (including potentially the packaging); performance data sheet; replacement element packaging; installation, operation and maintenance instructions, and system data plate. With these updates, the certification listings can also be updated to reflect the claim of microplastics reduction under *NSF/ANSI 401*.

The steps are similar for manufacturers with products that currently do not have claims of nominal particulate reduction, class I claims, except that these products will additionally have to be tested to assure that they conform to the testing requirement. The testing requirement is that a challenge of particles is introduced into test systems and the systems must reduce the number of particles in the size range of ≥ 0.5 µm to < 1 µm by 85 percent when operated, according to the specifications in the test protocol. Details of this testing protocol were included in the September, 2021 Water Matters column.

> At the time the column was written, a ballot prepared by the task group was out for consideration and voting by the Joint Committee. Since then, the voting period has ended with 100-percent affirmative votes cast.

Benefits to stakeholders

The way that the addition of this new microplastics reduction claim requirement in *NSF/ANSI 401* was accomplished, by basing the claim on an already existing test for nominal particulate reduction, Class I, brings significant benefits to stakeholders of the POU/POE industry. Manufacturers with products already meeting the requirements for nominal particulate reduction, Class I, can quickly and inexpensively establish a claim of microplastics reduction without the need for any additional product research and development or laboratory testing.

End users of POU/POE systems who have concerns about potential microplastic contamination of drinking water will soon have multiple options for products with third party-certified microplastics reduction claims. Regulatory officials can rest assured that these reduction claims are valid, based on robust standards developed through a consensus process, with conservative test methods that ensure product performance according to claims.

The NSF Joint Committee on Drinking Water Treatment Units (and the task group working on the microplastics reduction issue) used a scientifically based yet pragmatic approach when working on this initiative. Through a logical analysis of the issue of microplastics contamination, coupled with an assessment of the existing nominal particulate reduction, Class I test method and requirements, they were able to arrive at a sound solution without reinventing the wheel or adding unnecessary costs to testing and certification, thus benefiting manufacturers, end users, and regulators.

About the author

Rick Andrew is NSF's Director of Global Business Development – Water Systems. Previously, he served as General Manager of NSF's Drinking Water Treatment Units (POU/POE), ERS (Protocols) and Biosafety Cabinetry Programs. Andrew has a Bachelor's Degree in chemistry and an MBA from the University of Michigan. He can be reached at (800) NSF-MARK or email: Andrew@nsf.org WCP

What's New

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https://www.johnguest.com/

Filter cartridges

Rusco introduces three new filter cartridges, including a carbon block, pleated and melt blown (spun) media. They will enhance sediment removal capabilities and widen applications to address chemical contamination concerns. The latest installment of spun and pleated filter cartridges improves sediment removal efficiency to as low as one micron through advancements in composition, surface area and pore size. The activated carbon units, which operate at a rate of 10 microns, address areas not covered by existing products, including taste and odor, lead and chlorine as well as VOCs and chemicals. A comprehensive lineup of six different types of high quality filter cartridges will now be offered by the company.
https://www.rusco.com/

Cable clamps

Product Depot introduces the Sub-Tite Cable Clamp, an easy-to-use cord management and fastener tool that holds wires to the well pipe and keeps the wiring centered in the well casing. The clamp uses a dual-locking mechanism to be secured along the length of a drop pipe four times quicker than tape and it is made of water-safe and food-safe materials.
https://www.productdepotinc.com/

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https://www.grundfos.com/

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https://www.us.endress.com/ WCP

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