

A male cardinal and a female cardinal are perched on a snow-covered pine branch. The male cardinal is on the left, facing right, with its bright red plumage and black face. The female cardinal is on the right, facing left, with its muted brown and grey plumage and black face. The pine needles are green and dusted with white snow. The background is a soft, out-of-focus blue-grey.

Wisconsin **Rural Water** **Journal**

Winter 2021

Frozen Pipes

Electrical Energy & Safety

**2020: A Year to Forget
and to Not Forget**

**Manganese:
A New Old Problem**

**Business Spotlight:
Pittsburg Tank
& Tower Group**

SPECIAL ANNOUNCEMENT

WRWA Announces new dates for Operator Expo and Technical Conference

— **WRWA ANNUAL OPERATOR EXPO** —
Thursday June 24, 2021

— **WRWA TECHNICAL CONFERENCE** —
week of August 31-September 3, 2021

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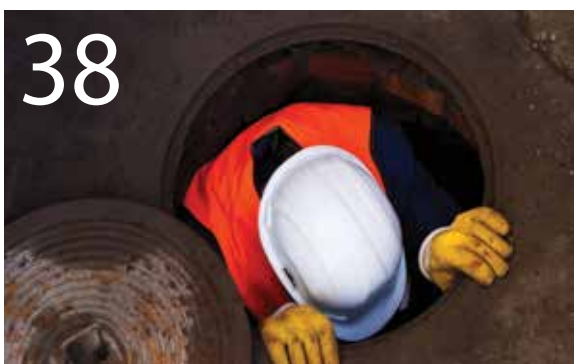
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OFFICIAL PUBLICATION OF THE WISCONSIN RURAL WATER ASSOCIATION

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Address all letters to the editor, advertising inquiries and correspondence to:
 Wisconsin Rural Water Association, 350 Water Way, Plover, WI 54467.



Ramon Knudtson,
WRWA President, Melrose

Message from the President

I hope this issue of the WRWA Journal finds you all and your work force has stayed safe from COVID-19. With 2020 coming to end, hopefully things will get better sometime in 2021. In regards to the new year, the WRWA Board of Directors just had a board meeting and after much discussion we are changing dates around on the conference and expo. The dates are noted in a Special Notice in the Journal. The DNR will be doing some operator certification testing starting in late December. Please check in with Chris to see how this is being handled. Just a reminder that WRWA will be holding elections for several board positions in 2021 including District 3 where my term will be up. I have had a great time serving on the board and anyone wishing to serve on the board should get ahold of Chris or give the office a call. **It is very easy to become a Board Member and the chance to serve other members is very satisfying.** If you have the wish to serve other fellow operators and your neighboring systems please think about being a Rural Water Board Member.

I want to wish all happy and safe holidays and a happy and safe new year.

Ramon



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WRWA Mission:

Assisting, educating
and representing
our members in the
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Industries.



Chris Groh,
WRWA Executive Director

Even in a Bad Year there are a few Highlights

The end of the year is here and tradition says to look back and see how lucky and blessed one is. Well not this year. I have never wished away time since there is less and less of it available to me, but I'll make an exception to 2020! This year has been one to put in the book of "Not so Much." The faster this year goes away the better and good riddance.

Even in a bad year there are a few highlights. We work with some very heroic operators that have come forward and gave their time to neighboring systems. We had the privilege of putting together other operators that volunteered to work for others if the need arose. We had a chance to put together emergency plans that saved us from certain doom due to a virus that we never would have thought could stop a world (except in science fiction stories). We also survived something that changed the world and took over 300,000 American lives (and counting), which should bring us together.

Always looking ahead, the prognosis of getting vaccinated and returning, eventually, to normal we can expect training and other events to resume face to face. It's handy for people to attend training virtually, but it is not the same as being there to see the presenter, their material and to ask questions. Even the opportunity to talk with other operators is quite a learning experience and is something lost in the virtual world. That being said, I can make an announcement that we all have been waiting for:

The WRWA Operator Expo will be held Thursday June 24, 2021

**The WRWA Technical conference will be held the week of
August 31 to September 3, 2021.**

These dates have been moved this coming year to allow the maximum number of operators to get vaccinated, and to allow our Expo to be held maybe before everyone is vaccinated but still outside in a safer, more spacious environment. It will be great to have y'all come.

My biggest regret in 2020 was not seeing my many friends and colleagues in person and getting a chance to say hello and see that you're doing well. Hopefully we take care of that next year.

Until then we wish you a happier new year, a safer year, and maybe a chance to grab a beer together soon.

Chris



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Dear Andrew,

After many months of hard work and collaboration, the Extraterritorial Zoning Committee adopted an extraterritorial zoning ordinance on June 18, 2020, which regulated land uses within a 1 ½ mile boundary surrounding the Village of Crivitz. All regulations within the boundary are intended to protect groundwater, and thereby the drinking water for Town and Village residents into the future. I have enclosed a copy of the ordinance for your records.

On behalf of the Village of Crivitz, please accept my sincere appreciation for updating our Wellhead Protection Plan, the bases for the ordinance, and all of the advice and information you contributed to this effort. Your presentation at our July 25, 2019, meeting was exceptionally invaluable. We very simply could not have done it without you!

Sincerely,
Kurt M. Kostuch,
President,
Village of Crivitz

Annie and staff at WRWA,

The Village of Shorewood Hills would like to offer our appreciation in the borrowing of your vac trailer setup. We were able to clean out numerous storm sewer catch basins as well as the majority of our 6" water valve boxes. This could not have happened at a better time as we are in the middle of a storm sewer audit. We thank Annie for offering us the option of utilizing the vac trailer. As the new Public Works Crew Chief, I look forward to our new partnership and working together in the future. Thank you WRWA.

Mike Meier,
Public Works Crew Chief,
Village of Shorewood Hills

Dear WRWA Staff,

The City of Green Lake would like to thank all the staff at WRWA for the technical support we have received over the years. The training seminars have been very informative sparking ideas to improve our water and wastewater utilities as well as meet the need of license renewal. The circuit riders have been exceptionally helpful especially with the very unusual issues that develop. The office staff is exceptionally responsive to our needs.

Small town utility operations seldom have the wide range of expert knowledge that can be required from time to time. WRWA fills the gap to help us meet the existing and new regulations. We believe the funding that comes from the State and Federal level needs to be continued to support the training and meet the ever-advancing technical needs.

Glen McCarty,
City of Green Lake DPW

Hi Renee,

We here at St. Benedict's Abbey would like to say THANK YOU for all the work you and your group have done for us this past year.

With all the issues going on this year we appreciate you guys (gals) keeping us informed with training, school and news.

Keep up the good work God Bless, Merry Christmas, and Happy Holidays.

Sincerely,
Scott, Mike, Ryan,
Maintenance Dept. St. Benedict's Abbey

Renee,

I enjoy working with you as well. Thank you for the wishes on my retirement.

Merry Christmas & Happy New Year to you too.

Tammy Peck,
William/Reid

I want to say Thank You to Jeff LaBelle for helping Danbury with the hydrant repair.

We learned the repair was bigger than we had anticipated. Jeff helped locate the needed part from a local city utility department. With Jeff's help we were able to get the hydrant repaired and up and ready for use. Thank You Jeff.

Patti Edwards,
Operator,
Danbury Utilities

Dear Chris,

I would like to thank you, on behalf of the Village of Merrimac, for the service WRWA's Kay Curtin provided to us on her November 5th visit to our wastewater treatment facility (WWTF), where she met with DPW Justin Schultz, Maintenance Operator Derek Peetz, Village Assistant Margaret Budde, and myself. Over the past few years, we have experienced some challenges with Total Nitrogen in our effluent, especially in winter months. When we described these issues to Troy Larson at Strand Associates, a former colleague familiar with WWTF operations, he recommended Village Staff reach out to Kay.

Margaret, who is a wastewater engineer by training, talked with Kay by phone on several occasions in advance of her visit on November 5th. Up until her visit, we believed our issue was the "Moving Bed" Anoxic Zone. However, during her visit, we came to understand that other issues are likely in play: the long detention time in our primary settling tank and the age of the media in our Recirculating Sand Filter (RSF). Interestingly, some of that advice was rendered just by Kay's looking at (and smelling) the process tanks and RSF; obviously, this is insight that cannot be garnered over the phone. It is clear that Kay very much cares about supporting small Wisconsin wastewater utilities and their abilities to meet their limits. We hope this is a service that will continue to be supported.

In addition to the advice we received, Kay also lent us two pieces of equipment: (1) a probe for measuring ORP (oxygen reduction potential) and (2) a Hach DR 900 colorimeter for measuring the Ammonia, Nitrate, and Nitrite-Nitrogen in our effluent. These pieces of equipment are somewhat expensive for purchase, so being able to borrow them is allowing us to gain the insight we needed. By trying them out, we can determine whether they would be useful for us to purchase in the future.

Thank you again for the resources that WRWA provides to small Wisconsin municipalities. Please feel free to share this letter as needed to support the work your organization does for us.

Sincerely,
Philip E. Budde, P.E.,
President,
Village of Merrimac Trustees

To Whom It May Concern,

The Village of Lublin would like to express our sincere gratitude and appreciation for all the help received from Kay Curtin of WRWA. Her knowledge and guidance was a great resource to us.

We look forward to the opportunity to continue to work with your company.

Sincerely,
Randy Madlon,
Village of Lublin President

Mr. Groh,

I wanted to express the Village of Deer Park's appreciation for all the help we have received from WRWA with our wastewater issues the past year. We recently lost a long-time wastewater operator and Kay Curtin has been and continues to be a great help guiding us through some difficult times. She has helped keep us in compliance with our wastewater plant.

Sincerely,
Dale Clarkson,
Clerk/Treasurer,
Village of Deer Park

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Jesse Hass,
*WRWA Wastewater Technician/Trainer
Wastewater Specialist*

This is a great profession with many great people in every aspect of the industry.

Operating a utility seems to become more and more difficult by the year. With constrained budgets, reporting limits that continue to drop, media and social media not understanding our industry, and a host of other issues, being an operator seems pretty thankless these days.

A topic that comes up often in my visits is the difficulty in dealing with board or council. City budgets continue to tighten while the cost of nearly every service and good continues to rise. The fiscal policy of a board and the thought of raising water or sewer rates is an issue I run across often. Most boards don't want to put a strain on the rate payers. The problem with a city never raising rates is rates can double or triple when a big project needs to be done. A solution some municipalities have implemented is having rates raise a percent each year to avoid the



shock of a massive single year increase. Another board related issue is, a single board member can make things a lot more stressful for a city employee. Sometimes a board member decides to serve because they

are upset you got the job over a relative or you trimmed a tree in their yard. In those instances there not much you can do to make either situation better. Luckily, in most cases, dealing with a board is difficult because of lack of education. Try to schedule a meeting every so often at your facilities to show the board what assets you maintain and what goes in to performing the duties of an operator.

Another issue regarding budgets is trying to plan for DNR limits. Public safety and wildlife protection are very important issues. I understand that it isn't easy for regulating agencies to determine limits. The problem is, as limits go lower on a variety of contaminants and new contaminants are identified, the cost to municipalities is astronomical. On the wastewater side of things there is BOD, solids, nitrates, ammonia, phosphorus, and the possibility future contaminants. Some of those contaminants are very expensive to remove. Systems should start planning for ways to optimize their utility to meet lower limits. A major issue is even if a plant is optimized the process may not be amenable to removing certain contaminants. All plants should be collecting as much data now and strengthen ordinances. Make sure you understand and identify all sources of waste entering the plant. Try to have an idea what the waste from each industry in town is sending to your facility. Sampling at an industry or in the collection system will allow you to gather data to strengthen your ordinances against slug loads and unwanted waste. Try to work with your board to set prohibitive fees for all contaminants that affect the treatment process. Start planning now for how your utility is going to deal with meeting low limits and other issues that may arise in the utility.

Another major issue in this industry is one big media story can have major ramifications on future budgets. No one foresaw the "Flint" case blowing up the way it did, but now water utilities across the nation are dealing with the aftermath. When a story gets traction there tends to be tons of misinformation that spreads like wildfire. Having a way to deal with concerned citizens quickly before they get misinformation is going to be much more important part of working for a utility moving forward. Something that may help cities moving forward is developing a checklist of how to deal with different types of emergencies and building a way to get that information to your rate-payers. Developing a social media presence can be a valuable tool to get correct information to the public.

Although it may seem like the deck is stacked against public employees it still is a job with a lot of upside. This is a great profession with many great people in every aspect of the industry. When the world is back to a semblance of normal reach out to other municipalities to see how they are dealing with issues. Always try to amass knowledge to stay ahead of the curve. Lastly, if you need someone to talk to about some of these issues give your WRWA circuit rider a call and bounce things off us.

Jesse

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Frozen Pipes

By Annetta Von Rueden

There are steps that can be taken to prevent frozen pipes while protecting our water system.

Winter brings plummeting temperatures. As leaves begin to fall, the countdown to the first snow begins, and along with that, winterizing homes. We all know there is nothing like getting called out for frozen water pipes.

Freezing and bursting water pipes are common and expensively frustrating to many people. During cold weather, frozen pipes are one of the most common causes of property damage, with the resulting water damage being extremely costly to repair.

There are steps that can be taken to prevent frozen pipes while protecting our water system. Although keeping your pipes warm during the winter may raise heating bills a little, the temporary inconvenience is well worth avoiding the frustration of a ruptured water line.

As temperatures drop, water begins to freeze and water pipes are particularly vulnerable to freezing. Water pipes that freeze are at risk of rupturing, leading to serious leaks and flooding.

When water freezes, it expands. And if water inside of pipes freezes, it expands, putting the whole system at risk of rupturing. The pipe rarely bursts where ice has formed. Instead, freezing portions of the pipe force pressure downstream between the faucet and the ice blockage. This is where the pipe bursts. Usually in places without any ice at all.

Wind chill plays a significant role in freezing pipes as well. If unheated spaces have holes, cracks or openings that allow cold, outside air to blow in, the cooling effect accelerates ice formation. Even small openings can allow a dangerous amount of cold air into a structure. For example, small holes where telephone, cable, internet, or television lines enter a room.

Pipes located in unheated interior spaces are especially prone to ice freezing, including garages, attics, and basements. The basement is a common area for the most frozen pipe failures. Even pipe systems that thread through cabinets or exterior walls can freeze under the right conditions.

WHAT TO DO IF YOUR PIPES FREEZE?

Frosty pipes. If a section of your pipes is exposed, check to see if frost has developed on the surface. If it has, there is a good chance the pipe is frozen.

No water. Lack of running water. If you turn on a faucet and nothing or only a small trickle of water comes out, this is a good indication of an ice block.

You need to take extremely cautious measures when trying to unthaw any pipe. If a pipe has a burst, thawing it out could cause flooding and damage in the home. The best course of action is to consult with an experienced plumber.

TIPS TO PREVENT FROZEN PIPES IN THE WINTER.

It is easy for pipes to freeze during a cold winter. It is just as easy to protect them from the low temperatures. Here are ways to keep your pipes from freezing.

Before Winter:

- Install specifically designed pipe insulation.
- Seal cracks, holes or openings.
- Seal crawl spaces. Stop drafts from entering.
- Apply electrical heat tape to pipes.

During Winter:

- Keep garage doors closed.
- Open cabinets regularly to keep warm air circulating around plumbing.
- Let faucets drip.
- Open interior doors to keep the home at a constant temperature.
- Keep the thermostat constant, set heat to 55 deg Fahrenheit when not at home.

Lowering the temperature to save money on heating bills can back-fire compared to an expensive plumbing bill from a burst pipe.

Now that winter is surely here, in the end, we could ask ourselves; did we fail to plan, or was it plan to fail?

Stay Safe Everyone. And SHOP LOCAL. — *Annie*

Winter Operators

By George Taylor

Hello Everyone,

As winter approaches with freezing temperatures and tons of snow, water operators must now start thinking about "Winter Operations" for their water systems. I'm here to give you a few helpful tips to get through these next few months of extreme cold.

First off, make sure all heaters and heat tapes are turned on within your facilities. I've seen it time and time again where just forgetting to plug in or turn them on turns into a frozen line situation or burst pipe.

Next, keep a map of your distribution system handy with you. You never know when or where a frozen line or burst pipe will happen. But when it does, you will be prepared to locate the service lines or curb stops fast and effectively. Some operators will even go out into the field and flag or GPS their service lines and curb stops. This saves time locating them during them emergency situations.

Always have clean access to your facilities during winter. Remove or plow snow away from the most important parts of your water system. Well houses, hydrants, and valves.

Also check your local weather forecast throughout the winter. When the temperatures drop it may be a good idea to send out a trickle water notice to prevent any future freeze-ups to customers.

Keep a current Emergency Response Plan at the ready. Depending on the situation, it's always a good thing to have all your contact information at the ready.

These are just only a few tips to help get you through the winter. **Remember be proactive in identifying and preventing any potential problems within your water system.**

We at Wisconsin Rural Water Association are always here to help with you with any situation that may arise. Also make sure you check our web site at www.wrwa.org for any Online or In-person trainings that you may need.

Thanks for reading,

George Taylor, Small Water System Circuit Rider

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To 'V' or Not to 'V', That is the Question

By Kelly Thomas

You've probably been reading a lot about vaccines nowadays, with COVID-19 vaccine information likely filling your various feeds. It can be difficult to decide whether to inject a "foreign substance" into your body. The intent of this article is not to sway you one way or the other, just to provide context and a glimpse of the big picture.

One year ago, who would have imagined that come March, mask wearing would be the "normal" thing to do when grocery shopping, stopping at the post office or going to work? Who would have dreamed that our schools would be closed and children would "virtual learning" from home? "Virtual" is a word that gets tossed around a lot now because it is an accurate description of how we have been forced to communicate with others in life . . . for now.

Currently, the state of Wisconsin is (more or less) shut down. When I say "shut down," please understand that I am simply stating that we are not living our lives as freely as we did one year ago. That is something to which I think we can all agree. Further, I think we would all agree that we'd like things to back to the "old" normal.

The only way to return to our normal is to prevent the spread of COVID-19. We all hear the words "flatten the curve," "social distancing," "wear a mask," and "stay home." These things, if done properly, can help slow the spread of this virus. As of this writing, COVID-19 vaccines have been tested and approved for use. In fact, three nurses in Madison just became the first COVID-19 vaccination recipients in our state!

Most Wisconsin counties have very similar plans for determining eligibility and prioritization for the first round of vaccines. Those plans for the 'first wave' (Phase 1A) tend to include workers in local health care systems, medical clinics, pharmacies as well as EMS, other health care workers and

At the end of the day, we are all adults when making decisions for ourselves.

residents of long-term care facilities. Fire personnel, law enforcement and corrections workers will be eligible sometime after Phase 1A is complete. The remainder of the eligibility criteria is still being finalized. WRWA is working diligently to have Water and Wastewater operators included on the eligibility list along with firefighters and law enforcement.

So, when it is your "turn" to be eligible for the vaccine, will you take it? That is a question only you can answer.

If you get vaccinated early, you will get early protection against the virus. If you wait to get vaccinated in hopes of a "better" vaccine, you remain at risk for infection until vaccination occurs. But, in the end you may receive an improved product. Decisions, decisions!! I will add that you may want to consult your physician prior to any decision to see what option may be best for you.

Once there is a large enough population vaccinated against this virus, the government can look at easing current safe-distancing measures. In other words, if many people in WI choose to get vaccinated early, we can hopefully embark more quickly on our recovery journey. For WRWA, that means offering more live and in-person training, hosting our Annual Technical Conference, and holding the Outdoor Expo with one-on-one networking. We miss these things and look forward to seeing our operators in person again!

At the end of the day, we are all adults when making decisions for ourselves. But I do want to remind you to consider how your decision may affect not only you, but your family, friends, community, and state.

Stay safe and stay healthy. *Kelly*

Editor's Note: WRWA is fighting to include water and wastewater operators, and all other utilities to be included in "Phase 1b" vaccinations. State DHS seems to have awareness of our industry and we are confirming that we need to have our operators vaccinated as soon as possible-Chris

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PSC WATER RATE INCREASE ORDERS ISSUED

JUNE 1, 2020 – AUGUST 31, 2020

| UTILITY NAME | ORDER ISSUED | OVERALL% INCREASE |
|---|--------------|-------------------|
| New Auburn Municipal Water Utility | 09/02/20 | 23.37% |
| Brown Deer Water Public Utility | 09/02/20 | 12.69% |
| Sheboygan Water Utility | 09/09/20 | 9.49% |
| Lincoln Sanitary District No. 1 | 09/14/20 | 48.46% |
| Racine Water Works Commission | 10/13/20 | 10.44% |
| West Allis Municipal Water Utility | 10/20/20 | 3.81% |
| Scott (Town of) Water Utility | 10/22/20 | 25.68% |
| Onalaska Municipal Water Utility | 10/29/20 | 38.59% |
| Whitefish Bay (Village of) Water Utility | 11/05/20 | 15.47% |
| Paddock Lake Municipal Water Utility | 11/10/20 | 151.09% |
| Elroy Municipal Electric and Water Utility | 11/10/20 | 11.31% |
| Grand Chute (Town of) Sanitary District No. 1 | 11/17/20 | 4.62% |
| De Pere Water Department | 11/17/20 | 19.01% |

PSC CONSTRUCTION AUTHORIZATIONS ISSUED

JUNE 1, 2020 – AUGUST 31, 2020

| UTILITY NAME | ORDER ISSUED | CONSTRUCTION COST |
|---|--------------|-------------------|
| Osseo Municipal Water and Sewer Utility | 09/01/20 | \$4,400,000 |
| Wilson (Village of) Municipal Water Utility | 09/09/20 | \$18,021 |
| Wausaukee Water and Sewer Utility | 09/11/20 | \$979,885 |
| Hurley (City of) Water Utility | 09/17/20 | \$233,011 |
| Darboy Joint Sanitary District No. 1 | 09/24/20 | \$1,981,000 |
| Milwaukee Water Works | 10/02/20 | \$22,607,836 |
| Spring Valley Waterworks | 10/13/20 | \$167,806 |
| Coloma Municipal Water Utility | 10/13/20 | \$45,000 |
| Lannon Municipal Water Utility | 10/26/20 | \$600,000 |
| Kenosha Water Utility | 11/19/20 | \$4,807,561 |
| Oshkosh (City of) Water Utility | 11/11/20 | \$792,000 |

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| 6,001 – 10,000 | \$520 |
| Over 10,000 | \$585 |
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| Corporate | \$1,465 |
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| Half page | \$315 | \$1,130 | \$395 | \$1,265 |
| Quarter page | \$215 | \$800 | \$270 | \$860 |
| Business card | \$160 | \$575 | \$200 | \$600 |

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| Color Advertising | 1-Time | Yearly | 1-Time | Yearly |
| Inside front cover | \$670 | \$2,430 | NA | NA |
| Outside back cover | \$800 | \$2,540 | NA | NA |
| Full page | \$575 | \$1,970 | \$770 | \$2,670 |
| Half page | \$370 | \$1,265 | \$575 | \$1,965 |
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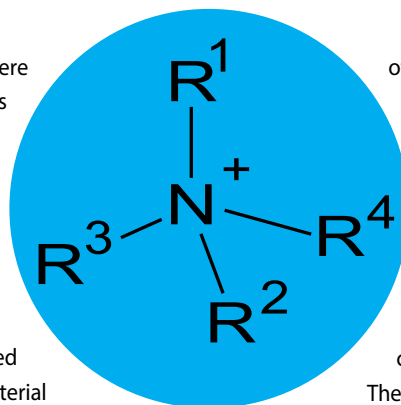
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GOT QUAT?

Kay Curtin
WRWA Trainer/Technician

Typically, municipal influent contains somewhere between 15-35 mg/L of ammonia nitrogen. This amount generally causes no problems with the microbial health in wastewater treatment plants. However, in the last few years we've seen this level climb and climb, with some plants frequently reporting 50 to 70 mg/L along with biological kill-off of their plants. What has changed?

Back in 1916, a new chemical agent was discovered by the Rockefeller Institute that showed antibacterial properties. This agent was called quaternary ammonia salts. They worked by denaturing the proteins of a bacterial or fungal cell, affecting the metabolic reactions of the cell and causing vital substances to leak out of the cell, causing its death. The discovery was put on the back-burner until the 1930's when it became more apparent that it would be a decent disinfecting agent for hospitals and clinics. By itself, a quaternary ammonia salt is not the best disinfecting agent, but what they found was that when quaternary ammonia salts were combined with alcohol, there was a synergistic change that allowed for a much faster kill of a broader spectrum of microorganisms. Thus, began the development of Quaternary Ammonium Compounds (QACs), typically known as quats. Many hospitals preferred to use this QAC/alcohol combination for its safety and efficacy attributes. At present, there are over 300 variations of quaternary ammonia formulations used in everything from sanitary wipes, shampoos, laundry detergent, cosmetics, sprays, and food production. Yes, food. Quaternary Ammonium chloride combinations, or several forms



of dimethyl benzyl ammonium chloride, are approved for use as an antimicrobial in human food products by the FDA, although in nominal amounts of less than 1%. One of the main uses is to avoid contamination of raw sugar. Time for a Keto diet, you say?

In short, **quats are now everywhere**. How does this affect us as wastewater operators? As you know, unless you've been on an intergalactic mission or in a coma the past year, we're in the middle of a pandemic.

The SARS-CoV-2 virus, causing COVID-19, has devastated the U.S. A SARS-CoV-2 virus does, however, have a vulnerability for which QACs can use to kill it. The alcohol in QACs breaks down the lipids surrounding the virus, and the quaternary ammonia disables those little protein spikey things (that's medical talk) that are all around the virus. Boom. Dead.

So, of course, any business, hotel, food production company, nursing home, school kitchen, hospital, or house-wife-or-husband is going to go crazy on using QACs to protect from COVID-19. Many EPA-recommended disinfectants contain quaternary ammonia compounds. Thus, the spike in influent ammonia. QACs are very stable, pH independent, and will kill the bacteria in your wastewater facility as well as the ones on Aunt Martha's cutting board. It's just human nature to believe that a lot of disinfectant is much better than the recommended amount, even though this is not true.

In reviewing Safety Data Sheets while trying to pin down the highest sources of quats in villages and cities with influent ammonia problems,



we've noticed that the majority of the large cleaning product suppliers are now using quats in their products, and sometimes in much higher concentrations than in the past. This affects smaller systems much more than larger plants due to the lack of dilution, but one plant that I visited had over 600 mg/L ammonia nitrogen entering the plant. Their plant also had many unhappy (and deceased) microorganisms. Ponds and other plants that cannot easily denitrify are especially vulnerable.

What are you as an operator or public works director able to do to prevent this problem? Did you notice that I said prevent, not fix? If levels are very high, you'll encounter a Catch-22; the ammonia will first kill the microorganisms that do the nitrification and denitrification in your plant, as they're the most vulnerable. A high influent ammonia nitrogen is difficult to treat, especially in cold weather when nitrifying bacteria are not wanting to do their jobs, anyway.

First, educate your managers and Village Board or City Council members on the problems that you're encountering. Use portable samplers to find the source of the QACs. (WRWA has some that you may borrow). Then meet with the owners, supervisors or other management staff of the source of the QACs. Explain to them how QACs affect the biology of your plant. If necessary, implement surcharges that begin at the level of normal municipal waste. Stop or limit it at the source, if possible.

Hopefully, the pandemic will be over in 2021, and the use of disinfectants decreases. In the meantime, if you're having problems with microbial die-off, check your influent for ammonia nitrogen levels.

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NaCl

Or Better Known as ROAD SALT

Todd Weich,
WRWA Water Circuit Rider

In the winter of 2017-2018, Wisconsin DOT alone used just over 567,000 tons of salt on winter roads.

Did you know that road salt and ice melts are most commonly made up of sodium and chloride? As all of us in Wisconsin know, road salt and ice melt are applied to roads and sidewalks during winter conditions to create safer winter conditions. Sand was used more often, however at the end of winter, the cleanup of sand was more of a hassle than dissolving salt. Road salt and ice melt than dissolves into the soil or runs through storm drains, eventually ending up in surface water and groundwater one way or another.

In the winter of 2017-2018, Wisconsin DOT alone used just over 567,000 tons of salt on winter roads. Did you know that just one teaspoon of road salt can pollute 5 gallons of water? Salt is starting to show up at an increasing rate in lakes and groundwater. As sodium chloride dissolves in the snow, the sodium soaks into the soil while the chloride soaks freely through the layers of soil, eventually reaching a source of water. Chloride is very tough to remove from the environment as the only way to lower chloride levels is by diluting the contaminated water.

According to the Wisconsin Department of Natural Resources, the level for chronic toxicity for aquatic life for chloride is 395 mg/L. A high concentration of sodium and chloride in road salt and ice melt is harmful to animals that rely on a source of water to drink which can cause salt toxicity as well as harm to household pets.

Not only does chloride affect the fish in our favorite fishing spot or our favorite pets, but it also negatively impacts our drinking water as well. The EPA has set a second standard for chloride in drinking water to 250 mg/L. While there are no direct health standards for chloride in drinking water it can change the taste and smell. Over time, sodium eventually makes its way into our fresh drinking water as well. While sodium does not affect most individuals, it is a health concern to those with restricted sodium diets due to high blood pressure. The EPA does require drinking water to be monitored for sodium and public water supplies must report to the local health department any concentrations above 20 mg/L.



Luckily, there are alternatives to the typical road salt. Those include the use of calcium, magnesium, or potassium, but they typically cost more upfront, hence the reason sodium chloride is used. Other options include using road brine when practical, anti-icing techniques, as well as calibrated spreaders to reduce the risk of over salting, yet still having safe driving conditions. At the household level, there are ways to prevent the use of chemicals such as shoveling early (often resulting in less salt needed), applying only when needed and what's necessary (salt is most effective between 32 degrees F and 10 degrees F), applying it away from storm drains or the use of an ice chipper. Ice can be a dangerous for a short time but contaminating your drinking source will have a long impact.

See Ya Soon *Todd*

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Electrical Energy & Safety



By Tony Roche

Drinking water and wastewater plant processes are driven, in large part, by electric motors.

I am sure most readers in the audience have experience working with electrical equipment. Drinking water and wastewater plant processes are driven, in large part, by electric motors. From pumps, to screens, to fans, to blowers, nearly all plants are heavily dependent on the safe and effective operation of electric motors. Most plants also contain motor control centers (MCCs) that house the controls (i.e. control panels, starters, MCC buckets) for these electric motors. Whenever a piece of equipment with an electric motor needs to be taken out of service there are a number of protocols that operators should keep in mind to ensure their health and safety.

Public sector employees fall under the jurisdiction of the Department of Safety and Professional Services (DSPS). DSPS code 1910.147(c)(1) states that employers shall establish an energy control program that ensures equipment is isolated from all energy sources before work is done on the equipment. Lockout/tagout (LOTO) procedures are an essential part of successful energy control programs and should be standard practice. Electrical LOTO procedures involve opening circuit breakers and control switches, but a common oversight is that once these breakers and switches are open the operator does not test the equipment to make sure that it is inoperable. However, LOTO procedures do not only impact public sector employees.

Private sector employees fall under the jurisdiction of the Occupational Safety and Health Administration (OSHA). In the year 2019 OSHA issued over 2,600 LOTO citations, and LOTO citations have made the "Top 10 most cited violations" list annually for the last 10 years. It is important

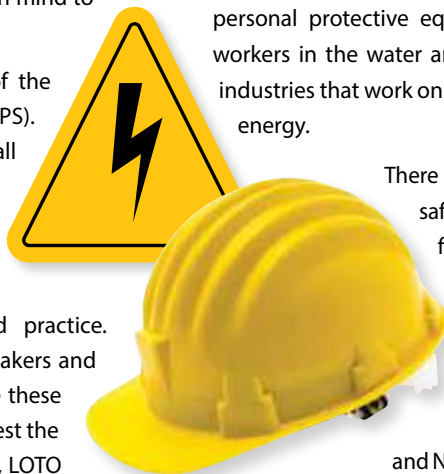
that all employees are educated about the risks of electrical safety and how to properly control equipment that contains hazardous electrical energy. In addition, there are other standards for proper electrical energy programs.

The National Fire Protection Association (NFPA) publishes the 70E Standard for Electrical Safety. This is a great reference for implementing an electrical energy safety program. This standard also contains other information such as control procedures as well as selecting proper personal protective equipment (PPE). This standard is not only for workers in the water and wastewater industry, but for workers in all industries that work on or around equipment with hazardous electrical energy.

There is no task or job that is worth jeopardizing safety. Remember, it's all about going home. Arc flash and shock hazards can be controlled by LOTO procedures, but other potential hazards such as equipment becoming accidentally reenergized can also be avoided with proper LOTO. If your employer does not have an energy control plan...get one! DSPS, OSHA, and NFPA all have great resources highlighting areas of

importance that should be noted when designing/implementing an effective electrical energy control program. Furthermore, the Wisconsin Rural Water Association hosts safety training that deals with hazardous energy control.

Stay safe out there and have a happy new year! *Tony*



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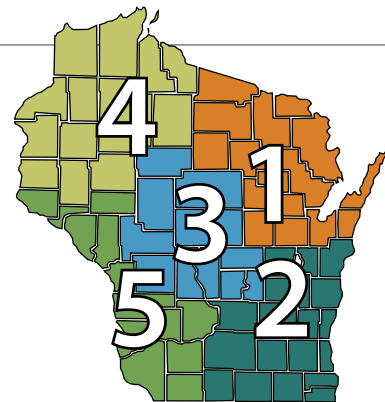
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Wonewoc

DISTRICT 4 (Northwest)

Almena
Amery
Ashland
Baldwin
Balsam Lake
Barron
Bayfield
Birchwood
Bloomer
Boyceville
Boyd
Bruce
Butternut
Cable Sanitary District #1
Cadott
Cameron
Catawba-Kennan Joint Sewage
Commission
Centuria
Chetek
*Chippewa Falls
Clayton
Clear Lake
Clover Sanitary District #1
Colfax
Cornell
Cumberland
Dallas
Deer Park WWTP
Downsville Sanitary District #1
Dresser
Drummond Sanitary District #1
Elk Mound
Exeland
Fifield Sanitary District #1
Frederic

Glen Flora
Glenwood City
Glidden Sanitary District
Grantsburg
Hammond
Hawkins
Hayward
Hudson
Hurley
Iron River Sanitary District #1
Joint Water Quality Commission
of Danbury & St. Croix Chippewa
Indians of WI
Knapp
Knight
Lac Courte Oreilles Public Works
Department
Ladysmith
Lake Hallie
Lake Holcombe Sanitary District #1
Luck
Madeline Sanitary District
Manitou Falls Sanitary District #1
Mason
Mellen
*Menomonie
Mercer Sanitary District #1
**Middle River Health & Rehab
Center
Milltown
Minong
Montreal
New Auburn
New Richmond
North Hudson
**Northwood School District
Oliver
Osceola
Park Falls
Phillips
**Pleasant Valley Properties
of WI, LLC
Port Wing Sanitary District
Prentice
**Primera Foods Corporation
Radisson
Red Cliff North
Rice Lake
*River Falls
Roberts
**S&J Wild River Mobile Home Park
St. Croix Falls
Saxon Sanitary District #1
Sheldon
Shell Lake
Siren
Solon Springs WWTF
Somerset
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Spring Valley
Stanley
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**Stresau Lab Inc
*Superior
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Tony
Trade Lake
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Turtle Lake
Washburn
Webster
Weyerhaeuser
Wheeler
**Whitecap Mountains Resort
Winter
**Wisconsin Structural Steel
Woodville

*Associate Members (Over 10,000 pop.) **Other Than Municipal

continued on page 22

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DISTRICT 5 (Southwest)

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Alma
Altoona
Arcadia
Arena
Argyle
Augusta
Avoca
Bagley
Bangor
Baraboo
Barneveld
Bay City
Belmont
Benton
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Cazenovia
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****Dell Creek Estates**
Dickeyville
Dodge Sanitary District #1
Dodgeville
Durand
Eastman
Eleva
Ellsworth
Elmwood
Ettrick
Fairchild
Fall Creek
Fennimore
Fountain City
Galesville
Gays Mills
Genoa
Gratiot
Hazel Green
Highland
Hillsboro
Hollandale
Holmen
Independence
Ironton
Kieler Sanitary District #1
***La Crosse**
La Farge
La Valle
Lake Delton
Lancaster
Lincoln Sanitary District #1

Linden
Livingston
Loganville
Lone Rock
Maiden Rock
****Marell Mobile Home Courts**
Merrimac
Mineral Point
Mondovi
Montfort
Mt Hope
Muscoda
Nelson
North Freedom
***Onalaska**
Ontario
Osseo
Patch Grove
Pepin
Pigeon Falls
****Pine Creek Water**
****Pine Edge Mobile Home Park**
****Pinewood Court Inc.**
Plain
***Platteville**
Potosi-Tennyson
Prairie du Chien
Prairie du Sac
Prescott
Readstown
Reedsburg
Rewey

Richland Center
Ridgeway
Rockland
Rock Springs
****Saint Bede Monastery**
Sauk City
****Sauk County Health Care Center**
****School District of Alma**
****School District of Mondovi**
Seneca Sanitary District #1
Sextonville
Shelby Sanitary District #2
Shullsburg
Soldiers Grove
South Wayne
Spring Green
St. Joseph Sanitary District #1
Stoddard
Strum
Trempealeau
Viola
Viroqua
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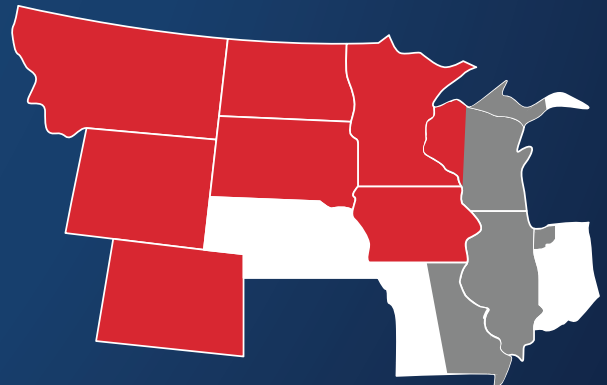
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2020

A Year to Forget and Not to Forget

We have planned for emergencies most of our careers and it paid off in the ability to supply water, and wastewater treatment without interruption and with the support of each other.

By Chris Groh

How many times have you heard someone say “I wish this damned year would end”? If you spoke to me at all this year you heard it plenty! I want to take some Journal space to go back and review the past year and what has affected us and our industry.

FIRST QUARTER COVID-19

The first quarter of 2020 WRWA was very busy getting the 32nd Annual WRWA Technical Conference ready to go at the end of March.

I had attended some national meetings to plan the year ahead for all our rural systems across the United States and to develop programs and funding for rural infrastructure. When Kevin Mraz (our National Director) and Dean Bergstrom (WRWA Board Vice-President) and I went to Washington DC in February we secured a lot of funding for USDA Rural Development and EPA Water and Wastewater. We did hear something about this epidemic in China called coronavirus and was sort of joking around about it coming to America. Fast forward to the

end of March and I have to send out an email stating that WRWA is going to have a conference, only to send out a cancellation notice to everyone that the conference is cancelled due to the COVID-19 coronavirus six hours later. I will be forever the first WRWA Executive Director to cancel our conference.

Immediately WRWA had to turn to emergency mode and develop procedures for sanitizing, safety and volunteer operators for help in systems that may contract this virus. The safe delivery of water to our rural populations, and the safe treatment of the waste cannot suffer or stop. Never has public health been at a higher level. WRWA developed and delivered many Emergency Response Procedures, took in volunteer operators, and lead the state in response in all our systems.

REST OF THE YEAR COVID-19

COVID ebbed and flowed for the rest of the year, never really reaching the levels in rural areas; until September, right around when school started back up. The virus began spiking in almost all areas both city and rural. Although by fall we knew a lot more about COVID, it still went into incredible numbers that climb daily. Again, WRWA safely helps systems keep their systems running and only have a few systems that have operators off for a time with COVID quarantines or an actual case of COVID. Going into winter, WRWA will be going back to remote contacts and meeting operators safely to deliver maintenance equipment and know-how to operators all winter into next spring.

PFAS

While they were working at home, DNR began putting together the health limits and all the legislative bits and pieces for the testing, treatment and enforcement. WRWA, along with MEG Water, MEG Wastewater, League of Municipalities, Wisconsin AWWA and others forms a Municipal Water Coalition to work with DNR and Wisconsin Water/Wastewater systems. Our coalition is attempting to work with DNR on creating legislation that will not put all municipal systems into instant violation when this legislation passes through the state government system. The coalition advocates for using real science, including waiting for EPA to finish a health study and determine at what levels enforcement action takes place. Presently DHS has set limits of 20 parts per trillion, with a PAL of 2 parts per trillion. These numbers are very different from EPA suggested limits. We also advocate for non-numerical limits for the various water standards in the state. This would be similar to chloride or mercury programs and procedures.

PSC 185

After a decade of trying to revise PSC 185 with no movement, PSC 185 was pronounced dead in February. A new rewrite of PSC 185 will start again in the future. WRWA will be involved and hopefully will have input into this rule that will better suit the industry.

PSC SHUTOFF MORATORIUM

The PSC issued a moratorium on shutting off individual water services during the pandemic in March. People need to have access to water for sanitation and turning off water to people who cannot (or will not) pay their water bills due to loss of a job or furlough from their job would leave them in a position to where they could contract COVID. Throughout the year the PSC re-issued the moratorium and inevitably will keep up the moratorium until the end of the winter moratorium in March 2021. This has lead to a loss of revenue for many systems, but the use of tax rolls to recoup money will help many systems with sustaining funding. Several programs were introduced in 2020 to help municipalities with funding issues, including the Wisconsin CARES act and Routes to Recovery act, which refunded money to municipalities for expenses due to COVID.

CONFERENCE, EXPO, DNR CERTIFICATION

WRWA, as mentioned earlier, had to cancel its annual conference. We also had to cancel our Operator Expo and all in-person training for most of the year. It did take us a while to get virtual training in place, but we now have quite a bit of training going on. Initially DNR gave operators whose licenses expired during the state shutdown were given extra time to get continuing education credits they normally

would have gotten from the WRWA conference, Expo or WRWA training for their license renewal. All other licenses that expired outside the shutdown period had to be renewed on time. Testing for new operators, or additional subgrades of a license was canceled throughout the year. DNR recently worked with WRWA in putting together a safe, sanitized testing procedure and operators that needed a license to get or keep a job was allowed to test at Plover. Scheduled testing will continue through the winter into February of 2021.

Loss of revenues from the cancelled Rural Water events was eased somewhat by many of our member systems and vendors kind donations of registration fees. This not only helped us out throughout the year,

but it showed the deep support that our members have for WRWA.

If there is a good note to this year, it's that we have all survived the year we never thought we would have. Who would have ever guessed that a world pandemic would have ever come to Wisconsin the way it has? We have planned for emergencies most of our careers and it paid off in the ability to supply water, and wastewater treatment without interruption and with the support of each other. With continued support we can outlast this awful time and come out better for it. It is so important going into winter that we maintain masking, handwashing, social distancing and all the other things that our health departments tell us to do. This is not fake; many people have died from this and many more are very sick. Please take care of yourself and your customers by being safe and continue doing the great work you have done these many years.



WRWA's Annual Water Conservation Poster Contest



Andrew Aslesen,
WRWA Source Water Specialist

Covid-19 has taken so many of our normal activities, and our annual poster contest is just one more thing in the long line of virus cancelations.

Normally at this time of year I get to announce the new theme for our annual Water Conservation Poster Contest and encourage everyone to reach out to their local schools asking them to participate. Unfortunately, this year is different. Covid-19 has taken so many of our normal activities, and our annual poster contest is just one more thing in the long line of virus cancelations. With last year's annual conference being canceled, we had to move the voting for last year's poster contest to an online platform. Unfortunately there are several things working against us this year. The first is the decision to push the Technical Conference back to the end of August 2021, which is beyond the end of the school year. The second and more important factor is the schools. Across the state we have a large variety of school attendance setups, everything from all virtual remote schooling to fully in-person schooling as well as hybrid approaches that mix the two. With teachers already working hard to adjust to all the challenges caused by Covid-19 we likely would have seen greatly reduced participation in the poster contest this year. While it's unfortunate that we aren't doing the poster contest this year, I thought I would take the opportunity to look back at the history of the poster contest.

The idea for the water conservation poster contest came from our former Source Water Specialist Patrick Harrington, who conducted the inaugural poster contest in 2009 and oversaw the contest until 2012 when he left Rural Water for a different job. The water conservation poster contest is open to 1st through 6th grade students throughout Wisconsin. Each year's contest has a theme which challenges students to think about their role in using and protecting our water resources and visually conveying their thoughts on how we can best conserve and protect such a vital resource. Teachers are asked to send the top three posters from their class to our office. At our office all of the WRWA staff vote on the best posters to narrow it down to the top 15 posters from each grade. The finalists are taken to our annual conference where they are displayed for conference attendees who choose the winning posters by voting on their favorites. As an incentive to encourage participation \$100 and \$50 cash prizes are awarded to 1st and 2nd place winners from each grade, and the schools of 1st place winners are put into a drawing for a single \$500 school prize.

The first year saw 49 classes from 37 different schools participate. If we assume an average of 15 students per class then we had an estimated 735 students participate during our initial year. Over the four years Patrick ran the poster contest he did an excellent job of growing participation and in 2012 we had 102 classes from 52 schools and an estimated 1,530 students participate. We are grateful to Patrick for starting such a great program to educate students across the state about the importance of conserving water.

When Patrick moved on from Rural Water there was no question about whether or not to continue the poster contest, so for 2013 I took over the responsibility of organizing the poster contest. It's a fun challenge coming up with a good theme, promoting the contest to teachers and organizing the entries. Over the 12 years the contest has been conducted it has continued to be popular, and we have had an estimated 15,000 students participate from 800 classes. Many teachers and schools participate every year and we have had several schools see multiple students from their school win. When schools participate in the poster contest they get the opportunity to request that Rural Water give a groundwater presentation to their class. From that, we have given more than a dozen groundwater presentations using our sand tank groundwater flow model every year, which is just another opportunity to educate students on the importance of protecting and conserving our water resources.

Although we are unable to conduct our annual water conservation poster contest this year, we plan to bring it back again next year

and continue our mission of promoting water conservation and educating Wisconsin's protecting our water resources. We appreciate Patrick Harrington for his role in starting the poster contest and we are grateful for all of the operators, clerks and board members who have helped promote the poster contest to their local schools. Like always, if you have any questions or if there is anything I can help you with, feel free to contact me; Andrew Aslesen, WRWA Source Water Specialist at Aaslesen@wrwa.org or calling 715-321-3451.

Andrew

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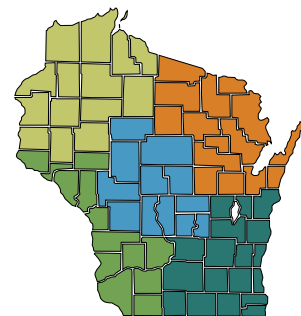
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SPOTLIGHT

Pittsburg Tank & Tower Group

By Erin Schmitt, media director/technical writer for Pittsburg Tank & Tower Group

Shoring up your tank with maintenance and repairs

Storage tanks are expensive. The initial cost is anywhere from hundreds of thousands of dollars to millions of dollars. Not maintaining a tank is like throwing that money away. Shoring up your tank with regular maintenance and repairs helps save money in the long run.

The American Water Works Association recommends that tanks be washed out and inspected at least once every three years. That is just a guideline – if a water supply has sediment problems, the agency recommends annual washouts. If used for fire protection in any capacity, tanks must be inspected every three years if they don't have corrosion control and every five years if they do, according to the NFPA.

Tanks should be pressure washed regularly. Even if a tank's exterior coating appears in decent shape, to know the paint's condition, the tank should be pressure washed with a biodegradable detergent injection to remove mildew, mold, tree sap, and other residues. That will help extend or preserve the life of a water tank. Once the tank is pressure washed, reevaluate the tank's exterior coating to see if a new coat of paint is necessary.

No coating system protects a tank indefinitely. Exposure to humidity, precipitation, and other elements will cause deterioration, and potentially mold and mildew will grow on the tank's surface. The most likely outcome is rust. Corrosion deteriorates the structural integrity of a tank, and that equates to additional expense.

Just because it's not that bad now doesn't mean it won't be worse in the future. If a problem is unaddressed, it usually becomes a bigger, more expensive problem. For example, tank owners might think it's okay not to paint a tank for thirty years, but a lot of deterioration can happen over that period, which might leave the tank unsalvageable.

Imagine a rust-streaked tank with chipped paint on the exterior. If it looks that bad on the outside, imagine how the inside looks. And that is where the water supply is kept. Rust on a tank's interior should be sandblasted to SSPC-SP10 specifications before repainting.

Sometimes a tank container is in bad shape, but the supporting structures and foundations are still serviceable. Rather than scrapping the entire tank, replace the tank container with a new one.



Pittsburg Tank Vent needs replacing because it's allowing rain and wind borne contaminants inside the tank



Pittsburg Tank Rust forming on interior roof

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It might not be as noticeable as fresh paint, but a solid foundation helps stabilize a tank. There should be no voids or gaps between the bottom of the tank and the foundation due to settlement. If there is, it needs to be addressed to eliminate the gap.

A cracked foundation can be an unstable one. Cracks and spalling in the concrete should be repaired to shore up the foundation. That is a kind of preventative maintenance because if the cracks and deterioration continue to deepen, it can and will become a structural issue, and deterioration can lead to tank failure. Caulk and grout can be applied around the tank's base to the foundation connection. Much like dentists recommend sealants for teeth to prevent cavities, tank experts recommend sealants to help prevent water from entering underneath the tank.



Pittsburg Tank Foundation pier slid off

Even the smallest part of a tank, if not maintained, can jeopardize the tank's structural integrity. A Mississippi tank began sliding off one of its foundation piers because the anchor bolts had rusted to the point they fail. Once the leg was put back in place, the anchor bolts were replaced, and the foundation shored up, the elevated tank was structurally sound again.

Anchor bolts are relatively small compared to other tank components, but they are vital. Anchor bolts – as the name suggests – serve to anchor the tank's foundation. Exposure to moisture causes the anchor bolts to rust over time if not repainted. Rusty anchor bolts are deteriorating anchor bolts, which could potentially compromise the structural integrity of a tank.

Anchor bolts are assigned to withstand 100 mph winds blowing in any direction, as required by AWWA D-100-11. Similarly, the NFPA calls for anchor bolts to be secure enough to "engage a weight at least equal to the net uplift when the tank is empty," and the wind is blowing from any direction. Cleaning the area around anchor bolts

and tightening the anchor nuts to specifications helps keep them in working order. Tack welding on the circumference of the nut-to-base plate connections and the bolt-to-nut connections can also help eliminate loosening.

Windage rods are designed to resist and stabilize a tank against high winds and seismic loads combined with dead and live loads. They should be adjusted so that a water tower can withstand wind speeds over 100 mph blowing in any direction. That is especially critical in areas where tornadoes, hurricanes, or strong winds are prevalent. A sudden collapse can occur if the bracing is not properly tensioned.

Replacing faulty or deficient vents can make the difference between a functioning tank and a collapsed one. An improperly vented tank may cause external pressure to act on the tank and cause it to buckle, even at a low-pressure differential. Installing a vacuum-pressure, frost-proof vent and screen can help prevent that catastrophic outcome.

Pressure-vacuum, frost-proof screened vents are multi-purpose. The screens help prevent insects, reptiles, fish, and other critters from entering tanks and contaminating the water. The vents also allow tanks to breathe, particularly in chillier weather, so that the tank doesn't freeze.

Older tanks, especially old "tinman" types, often have finial balls at the point of the roof. While they may hold some sentimental value, they are hard to screen, which means insects, birds, and other critters can enter the tank. It's best to replace finial balls with a pressure-proof, frost-proof vent.

What's inside the tank is just as important, if not more important than what's on the outside. Water drawn from the middle of the tank will be clearer than water drawn from the bottom where sediment lies. Extending the outlet pipe to the middle of the tank allows cleaner water to be drawn. Installing a mixing system also helps prevent the water from stagnating and sediment from resting on the bottom.

Internal overflow is piping inside the tank container, according to AWWA D100-11; 7.3 Overflow. Overflow failure can empty a tank's water supply. That is a worthy consideration when a tank has an internal overflow. Replacing the internal overflow system with an appropriately sized exterior overflow system might be the best course of action. The exterior overflow system should be equipped with a flapper valve and screen to prevent contaminants from entering the water tank, as well as a splash pad to shift water away from the tank's foundation.

Maintaining a tank and making repairs as needed will not only extend the lifespan of the tank but save the tank owner money. After all, it's a lot cheaper to make a few repairs here and get at least 50 to 100 years out of the tank than to have to replace the tank after less than 20 years because it was unsalvageable.



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MANGANESE

A NEW OLD PROBLEM



Jeff LaBelle,
WRWA Technical Assistance Director

After studying data from several water systems, we have seen that Manganese has increased in a couple wells over time.

Good bye 2020, Hello 2021. As I write this article I am thinking back over this last year. A strange year it has been. Seems like a life time in one year, from having to cancel our conference, Outdoor Expo, to limiting in person training, learning how to conduct classes over the world wide web. Needless to say it's been a challenging year. Here is to hoping 2021 brings some normalcy back into the world we live in. Can't say everything was totally bad, with no planned vacations, I took three weeks this last fall for bow hunting and shot one of my nicest bucks, and then gun season blessed me with another nice buck. The Taxidermist loves me, my wife not so much...

Manganese has become an issue for some systems around the state. The DNR has issued do not use orders to some communities. Some communities are able to shut a well or two down and are below the 300ug/l at this time, some not so fortunate.

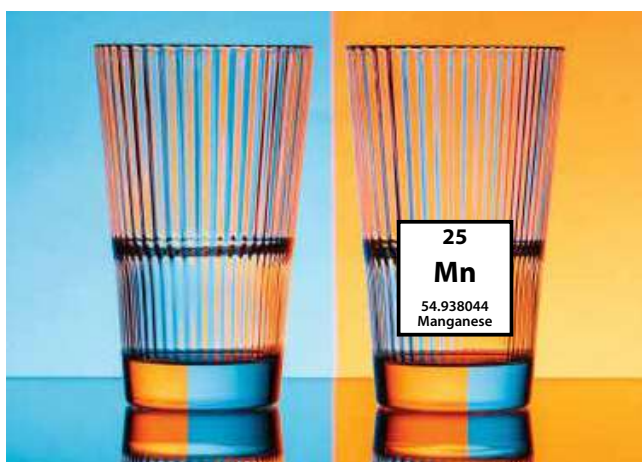
Manganese is an essential element that our bodies use, but excess amounts according to the EPA, State Department of Health Services (DHS) and DNR have serious health effects including Nervous system, Kidneys and Reproduction. Those over 50 and 6 months and younger are most affected. DHS website states that in infants 6 months and younger, manganese may affect brain development and impact learning behavior. Also people with medical conditions such as Iron-deficiency, Anemia and Liver disease may be more sensitive. EPA has a health advisory of 300ug/l. Reading EPA web site is a joy (NOT), it is hard to find specific information on Manganese in drinking water. But what was found is what is called LHA (Lifetime Health Affect) in reading this I found that EPA uses this formula to help determine Health advisory and MCL's. LHA is one 150lb person drinking 2 liters per day of the same water for over 70 years to have a one in a million chance of getting sick or dying at set level of containments health advisory or MCL.

Looking back through systems data I found that even though you test inorganics every three years, manganese is only tested every 9 years. The inorganics taken this year does not include manganese. Manganese was last tested in 2017, before that was 2008, and again in 1999. Some systems were in exceedance of the 300ug/l in 2008, nothing was done at that time. After studying data from several water systems, we have seen that Manganese has increased in a couple wells over time. I have not been able to find a date that EPA designated manganese a health issue. I find Manganese listed as a secondary contaminant in NR809 Safe Drinking Water with a limit of 50ug/l for aesthetics. Going from there into NR140 Ground Water Quality, I find

Manganese listed at an Enforcement Standard in Table 1 NR140.10 at 300 micrograms/liter and a Preventive Action Level of 60 micrograms/liter. This is where enforcement of exceedance comes from. The rest of the chapter deals with compliance of a standard.

So where do we go from here? A system over 1000ug/l at entry point, will issue a DO NOT USE ORDER obtained from the DNR. Some systems will be able to shut down affected well(s) and continue normal operations while figuring out what needs to be done. A few unfortunates systems will have to go to

alternate water sources such as bottled water until an answer can be found and implemented. Some of the common options for manganese removal are to drill a new well and hope the problem does not appear again or install treatment. Treatment would normally involve some kind of a filtering system. Greensand filters with potassium permanganate is a common treatment. Treatment facilities can be either pressure vessels or open gravity tanks. Systems working with the DNR and engineering firms will determine what is the most realistic and cost-effective options for them. *Jeff*



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- Low construction costs and available contractors are not guaranteed to last.



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UP THE CREEK



Ken Blomberg,
WRWA past Executive Director

Tracks in the Snow

A track in the snow tells no lies. That fact was evident on a recent trek along the creek, soon after a fresh snowfall.

It all began when the boss spotted a lone tom turkey out the kitchen window. Through the spotting scope I saw his enormous beard, dangling in the snow. He pecked his way slowly along the edge of our food plot, where it joins the banks of the frozen pond. His presence and a fresh snowfall lured me outside despite the bitter cold wind out of the north.

I followed his tracks and surveyed the virgin blanket of snow up and down the creek. At first, I crossed the path of a pair of foxes, able to stroll atop the hard layer of snow that measured eleven inches on the level. With a crust at two inches below the surface, their light weight – 10 pounds, give or take a few – allowed for smooth sailing as they hunted for their next meal. They lingered a while under our little red pine plantation, a place where rabbit tracks abound. With nothing but footprints to sniff, they took to the creek bottom and headed west.

Then I met the tracks of turkeys – by my count, four individual birds – on their way from feeding in the neighbor's picked cornfield to an acorn crop and evening roost in the woods. The lone tom that we saw earlier had split off from the group, only to meet up later on the trail along the creek.

After crossing the creek near our line fence, an abundance of deer tracks appeared - in stark contrast to their absence in our fields. Fifty yards into the woods, I came face-to-face to a large doe and her triplet fawns. Were they the same family group we had watched all summer long feeding in our food plot? If so, that answered the question of their survival during the recent deer hunt.

I carried a camera instead of a gun that day, and long since hung up my urge to “earn a buck” for next season. Just as well – pulling the trigger would have tested my will beyond my need to shoot a doe at this point in time. I will take care of that issue next year, should the state sentence our zone to the next level of herd management.

I passed by as the four stood frozen in their tracks - akin to concrete yard statues – never taking their eyes off my progress. Then, in an instance, a small buck materialized out of nowhere, jumping over the trail near the southeast corner of the forty – disappearing into the neighboring woods faster than he appeared. His tracks in the snow painted a picture of flight, the distance between hoof prints measured in yards rather than feet or inches.

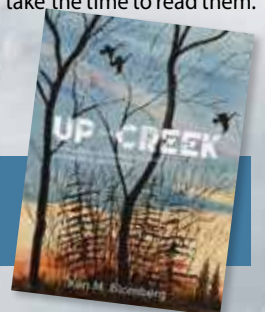
Turning to the north, then west, I crossed paths with a set of tracks left by a ruffed grouse. A loner in the pines, never on the ground longer than five, or six feet – then taking flight to low branches bearing buds – a winter staple of grouse diet. Then suddenly, any sign of his whereabouts disappeared. Where did he go?

It was late in the afternoon when I emerged from the woods on the blacktopped road that borders the west side of our property. As I passed by a stand of hemlocks, I gazed towards the upper branches and there he was - my roosting grouse, silhouetted against the fading light.

Snow serves many purposes. Not the least of which is to replenish our aquifers in the spring after meltdown. It also acts as an immense book covering the landscape, loaded with tales written in the snow. Tracks tell no lies - and reveal good stories to those who take the time to read them.

Yours in good health, Ken

Ken M. Blomberg is the past Executive Director of the Wisconsin Rural Water Association. Ken has written 2 books since his retirement. Autographed copies of his first book, UP THE CREEK, are now available for \$16.33, postage paid. A portion of the sale proceeds will be donated to WRWA's scholarship program. Send checks payable to Ken M. Blomberg, 2099 Mayflower Road, Junction City, WI 54443.





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ARE CONFINED SPACE FATALITIES GOING UP?



Vince Matarrese,
Advanced Safety Technology, Inc.
President

According to the Bureau of Labor Statistics, Census of Fatal Occupational Injuries, they are going up. From 2011 to 2018, there was 1030 worker fatalities involving confined spaces.

| FATAL OCCUPATIONAL INJURIES IN CONFINED SPACES U.S. Bureau of Labor Statistics | | | | | | | | |
|--|------|------|------|------|------|------|------|------|
| YEAR | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| FATALITIES | 120 | 88 | 112 | 116 | 136 | 144 | 166 | 148 |

According to OSHA, 29 CFR 1910.146 (adopted by the State of Wisconsin, Department of Safety & Professional Services, SPS 332 Code), a confined space:

- ✓ is large enough for workers to enter and perform certain jobs
- ✓ has limited means of entry or egress
- ✓ is not designed for continuous occupancy

I hear over and over again that my lift station, open top tank, vaults & pits, etc. are not confined spaces. Service companies coming in tell owners of the confined spaces, these do not meet the definition of a confined space or permit-required confined space. And, it does not apply to them.

A permit-required confined space that has one or more of the following characteristics:

- ✓ contains or has a potential to contain hazardous atmosphere;
- ✓ contains a material that has the potential for engulfing an entrant;
- ✓ has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- ✓ contains any other recognized serious safety or health hazard.

Public employers (owners of the confined space) contracting to have a service performed in or near their confined spaces are supposed to implement and enforce a safety program to be followed by the contractor that meets either OSHA 29 CR 1910.146 Permit-Required Confined Space Entry or 1926 Subpart AA Confined Space In Construction.

I hear over and over again that my lift station, open topped tank, vaults & pits, etc. are not confined spaces.

Employers and employees always say how safe they are, we send 3 people out to the site. It doesn't make a difference if you send 3 or 8, the math is the same:

No Air Monitoring + No Retrieval Equipment = Multiple Fatalities

Over and over again, every year you hear about 3 Utility workers dead, no air monitor used and no retrieval equipment. Sad part is when the equipment is available and they don't bring it to the site and use it.

Also, the best part of everything that is going on right now, people are using Covid 19 as an excuse not to train their employees and furnish proper equipment that meets the regulation. Can't I just watch a video! No money in the budget for equipment, calibration gas and training. The numbers will continue to go up.

So, what are you going to do about it?

Prior to entering, think about the following:

- ✓ Can you complete the job task without entering?
- ✓ Have you reviewed your procedures?
- ✓ Are your employees trained properly?
- ✓ Do you have a confined space entry permit opened?
- ✓ Have the hazards been identified and eliminated or controlled?
- ✓ Has pre-entry air quality testing been performed? Is it permissible?
- ✓ Are your air monitors calibrated?
- ✓ Do you have the required retrieval equipment, personal protective equipment, etc.

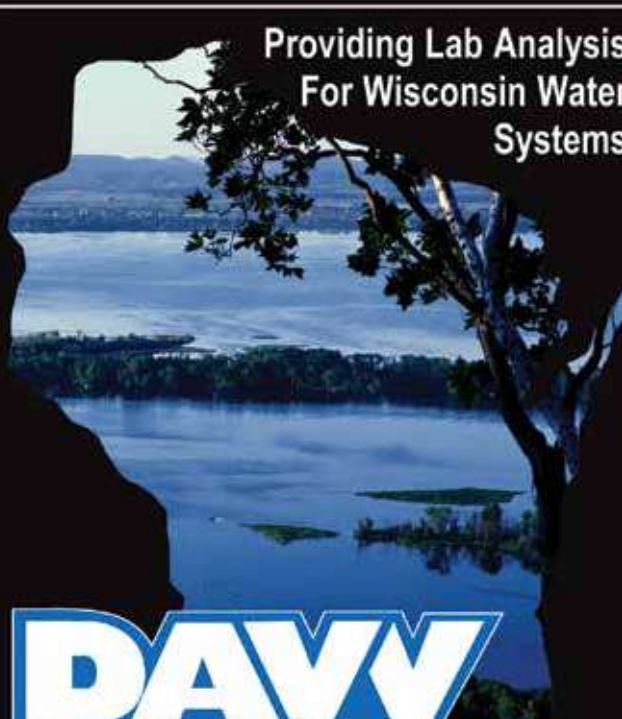
The National Institute of Occupational Safety & Health (NIOSH) studies of confined space entry fatalities have shown:

- ✓ 85% of the time a supervisor was present.
- ✓ 31% had written confined space entry procedures.
- ✓ 0% used the written procedures.

The above shows, no enforcement and no implementation. Don't wait until something happens. Make sure you have procedures that meet the regulations and your employees are trained properly. Don't take short cuts!

Remember, it's all about going home. *Vince*

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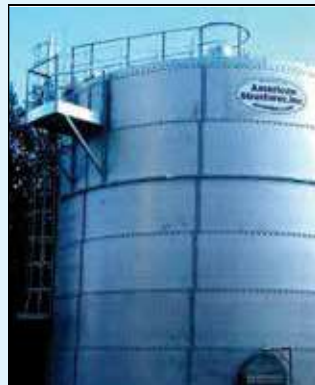
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