



Those filling this year's pools will feel better for the clarification!



**CONNECTICUT ONSITE WASTEWATER RECYCLING
ASSOCIATION INC.**
SUPPORTING CONNECTICUT AND OUR ENVIRONMENT
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FALL 2021

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members at \$50.00 per
100, including shipping.**

LETTER FROM THE PRESIDENT

Dear COWRA Members,

I hope all of you are doing well and that you and your family have come through the past 18 months without too many problems. This has been very difficult and challenging time for all of us. We still have a way to go with this virus, but many of us have been vaccinated and at least in Connecticut we seem to be handling this ongoing virus.

It has also been a very busy time for essential workers, as all of us have had to keep going. However, it was a good time for many homeowners to get general maintenance done to their homes which made it busier than usual for many of us.

We are planning to have an annual meeting this year, so it is my hope that I will have a chance to spend some time with all of you in person.

I hope this newsletter finds all our members healthy, safe, and thriving.

Sincerely
Frank Talarico

DATES TO REMEMBER

2021 Onsite Wastewater Mega Conference: October 17-20, 2021
San Marcos, Texas (see www.nowra.org)

COWRA's 2021 Annual Meeting Saturday, November 6, 2021

NEW MEMBER PROFILES COWRA WELCOMES:

Scott and Ben Collins of Yankee Septic

have joined our organization. Yankee Septic is a family-owned company that is located in Sheffield, MA. Yankee offers an array of services in Berkshire County, MA. and Litchfield County, CT. for both residential and commercial owners. In addition to septic work, they own a portable restroom rental company. Ben and Scott were students in COWRA's 2020 Cleaner Course. For more information about the services Scott and Ben provide, visit them on the web at:



www.yankeeseptic.com or
www.yankeerestrooms.com



William S. Coffey Joined COWRA and is the grandson of our Vice President William J. Coffey of Pembroke and he was also a student in this year's cleaner course. William is the next generation to run Pembroke Pumping Services.

The services offered by Pembroke include: both commercial and residential services, septic pumping, septic repairs, water jet, and electric snaking. Pembroke Pumping Services also offer city sewer and water line repairs and installation. To see all the services offered by their company, please visit them on the web at: www.pembrokepumping.com

Thomas Zappone is the owner of Boulder Ridge Construction. Tom joined COWRA earlier this year.

Thomas was a student in our 2020 septic Installer course. Boulder Construction, is located in Bethlehem CT.



Tom runs a full-service construction and remodeling company that handles a broad spectrum from the ground up. Tom serves both commercial and residential clients. Tom's goal is to deliver the highest quality product, and he is dedicated to the complete satisfaction of each client. In addition to construction, Tom is now offering, septic installation, inspections, excavation, and foundations. To learn more about Boulder Ridge Construction, visit him on the web at: www.boulderidgeconstuction.com



Thomas Costigan joined us in June as a new member.

Tom is the owner of **TGC Excavation LLC** which is located in Norwalk, CT.

Thomas was a student in COWRA's 2021 Installer Course. Thomas's services include: Septic System Installations, excavations, drainage and demolition. Tom's company has decades of experience handling all of Fairfield county's excavation need. TCG is one of the few excavation companies that has the machines and experience to handle pile driving as well as installations. To learn more about Toms company visit him on the web at: www.tgcexcavation.com

Joseph Zacchera joined COWRA as a supplier. Joe is a sales representative for **Connecticut Concrete Products, LLC**. Joe has been working in the wastewater and precast industry for over five years.



He supplies septic companies throughout Connecticut with the highest quality premium precast concrete products at wholesale prices. From septic tanks and systems, to bulkheads and precast stairs, Joe has something for all of your concrete needs. Joe provide CT. septic companies with concrete septic tanks, pumps drainage products, baffles and filters, and even plastic septic products. Joe covers all of CT., with two locations in Stafford Springs and Portland, CT. For more information about CCP's services, contact Joe at: 860 851-9132 ext. 101, or Email him at joe@precastct.com or, visit him on the web at www.ctconcretproducts.com

Eric Gagnon has joined us and he is the owner of **EG Septic Services LLC**, located in Windham, Connecticut. Eric was a student in COWRA's 2021 Septic installer course, and his services include: septic system installations and septic inspections. To learn more about Eric's company please email him at: egsepticsservices@gmail.com

Joseph Turosky has joined COWRA and is the owner of **Jorico Excavating** which is located in Danbury Connecticut. His services include septic installation, engineering services, excavation drainage, proprietary installations and sewer line installations. Joseph was a Student in COWRA's 2021 septic installer course. For more information about Joseph company, email him at: jturosky@aol.com



Philip Lendroth has joined COWRA and is the owner of **Palco Construction LLC**.

Palco was established in 2007 and is located in Northford, Connecticut and is a full-service construction company.

Philip is devoted to customer satisfaction and value. He provides quality construction for all his projects. His company provides services for both commercial and residential development. Palco Construction is dedicated to providing the highest level of professional construction services to its clients. His company is committed to building long-term relationships based on creativity, quality, and managing each project with integrity in a timely manner to the client's satisfaction. Palco's services include: septic installation, excavation, site development, foundations, retaining walls, demolition, property grading, drainage and sewer & water connection and repairs. For a full list of of the services Palco Construction offers, visit them on the web at www.palcoconstruction.com

Two new COWRA members have joined us from **Infiltrator Water Technologies**, **Dennis Hallahan** and **Carl Thompson**

Dennis Hallahan P.E., is the Technical Director of **Infiltrator Water Technologies**.

Dennis has over twenty-eight years of experience with



the design the and construction of on-site wastewater treatment systems. He oversees the department that is responsible for product research and testing for both universities and private consultants.

As Technical Director, Dennis oversees the design and construction of large decentralized water treatment systems. He is responsible for technology transfers between infiltrator and the regulatory and design communities. He is the author of multiple articles published for infiltrators contribution to wastewater and water technology.



Carl Thompson

Vice President of Sales at Delta Advanced. Carl is responsible for sales, technical services, and government affairs at Infiltrator.

He is also responsible for the operations of *Delta Advanced* – Infiltrator's advanced wastewater treatment business unit. He has been with

Infiltrator since 1997. Prior to his role as Vice President of Sales and Delta Advanced, Carl held several positions at Infiltrator including Vice President of Sales and Marketing, National Sales Manager, Regulatory Director, and Technical Director. He was also the project manager for the development of Infiltrator's first thermoplastic tanks - the TW-Series line.



INFILTRATOR®
water technologies

For more information about Dennis Hallahan or Carl Thompson, and for a complete list of products, visit them on the web at www.infiltratorwater.com

COWRA's INSTALLER COURSE 2021

COWRA's 2021 Installer and Cleaner Courses were a bit of a challenge this year. Covid threw a wrench in many of Connecticut's plans and we were no exception. For the first time our courses were not held in a classroom setting. COWRA along with so many other organizations conducted business virtually via ZOOM. Many of us are still dinosaurs when it comes to technology, so it took a bit of practice and perseverance but we pulled it off and had fifty-two students participate in this year's installer course.

Robert Smith

COWRA is grateful for the contributions of Robert Smith. Bob is a registered sanitarian with both the Torrington and Watertown Health Districts and he has served on the Board of



Directors of COWRA for several years. Bob is a dedicated instructor and teaches the Connecticut Public Health Code and Technical Standards to our installer students. Over the years Bob has been a devoted member of COWRA and the students he teaches. He donates his knowledge and expertise each year to mentor students with the goal of securing the septic installers license. Because of Bob's commitment, our students leave our course with the skills they need to apply their knowledge of the health code and technical standards to the systems they design and install. Students emerge from our course with a solid understanding of the health code and standards that will guide them through their successful installation.



Jeff Polhemus

We are very thankful to Jeff Polhemus, who generously offers his time each year to co-teach our annual septic Installer course.

Jeff is a Registered Sanitarian. He also a licensed septic installer. Over the years Jeff has worn many hats within the septic industry. Jeff is currently part of the team at Skips Wastewater Services

team in Ellington, Connecticut. This is Jeff's second year teaching our septic installer course. He is a vital addition to the success of our courses. Jeff shares with our students the wealth of his experience, with every aspect of the installation process. Jeff's focus is on the mathematical and technical construction of septic systems. He pulls together the many components needed to construct a viable septic system. From soil compositions, soil layers, a clear understanding of MLSS, and other factors that help students decide which products to use.

Together, Jeff and Bob make an awesome team!



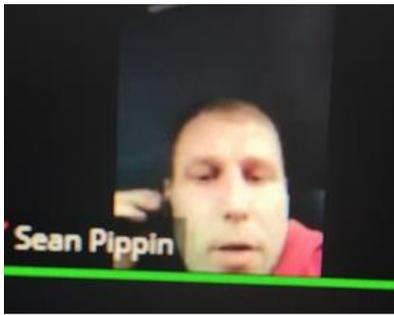
COWRA is so fortunate to have such dedication and experience looking out for our students.



COWRA'S 2021 PUMPER/CLEANER SCHOOL

Andrew Colman
owner of Skips Wastewater Services.

COWRA is thankful for Andrew who always does an amazing job teaching our Cleaner Course. Andrew generously donates his time to teach our cleaner course. This year's course was held on the Zoom platform on April 1, 2021. The course was attended by all the Installer students in addition to those students who only sign up for the cleaner course. Andrew shares with our students his vast knowledge and expertise to provide each of our students with the information they will need to pass the state exam and secure a state license. Andrew emphasizes safety, professionalism and quality of work product. He encourages student to show respect for the consumer's property and the importance of paying attention to even the smallest details when on the job. We are so grateful for Andrew's generosity in teaching this course.



Student Sean Pippin attending the cleaner course via his cell phone.

COWRA BORD MEETING

At the Board Meeting on July 15th of this year among other discussion, COWRA's President, Frank Talarico brought up a problem to the Board of Directors that he was concerned about. Frank had observed corrosion on multiple tanks that he had replaced or pumped. This problem has been happening for quite a while. He asked Board Member Dennis Jolly of Jolly Precast if he could explain the cause of this problem. Dennis said it was caused by: "(Microbial Induced Corrosion: MIC)" Aka MICC.(Microbial Induced Concrete Corrosion).

Dennis explained that the considerable erosion on concrete tanks, throughout Connecticut and world-wide was caused by an anaerobic bacterium that excrete sulphonic acid which degrades the binding materials within the concrete. This can be altered by allowing more aerobic bacterium in the tank but not illuminated. Dennis discussed the need for the State of CT. to address a solution the problem as the Technical Standard come up for revision in 2022. He has sent an email to the State health official requesting a review.

Dennis Jolley concluded by discussing a new product he felt might mitigate the problem many were finding. Dennis spoke of a product called ConSeal as a defense against Microbially Induced Corrosion. This product is designed to stop the process of converting hydrogen sulfide gas into sulfuric acid. Dennis though it would increase the cost of the average tank two or three hundred dollars, but it would be well worth it if it solves this growing problem. **See: ConSeal information inserts in this newsletter.**

SEPTIC TANK DETERIORATION

ALL About Gas
By David Steinkrausoo

Research is underway to provide answers to the problem.

It may show up as white crumbling concrete around it an outlet or as rusty streaks on the side of a tank, but comes down to the same problem septic professionals have been seeing for years – a deteriorating septic tank. There are steps that any pumper can take to investigate and address the problem.

Regulating Leakage

There is a reason so much conversation about the issue surfaced within the last few years, says Dave Gustafson, an engineer with the Water Resource Center at the University of Minnesota Extension. "I think that's when it started to be identified as a hydrogen sulfide issue. I think prior to that it was still a problem," he says. Hydrogen sulfide gas is produced naturally by anaerobic bacteria – the bacteria that don't use oxygen to digest waste and survive in septic systems without aeration.

Related: [Troubleshooting: Additional Items to Check in Troublesome Septic Tanks](#)

Hydrogen sulfide gives sewage and septage the characteristic smell of rotten eggs, and it is the combination of the gas and moisture that causes deterioration in concrete tanks. When hydrogen sulfide combines with moisture in the air inside a tank and moisture coating the tank walls above the septage level, it forms sulfuric acid. That is recognized as one of the most powerful acids, and it attacks the concrete.

Depending on when the lid is pulled for an inspection, the deterioration may still be small, just a bit of white decay around the outlet. If the acid has reached the reinforcing rod the tank sides will show rusty streaks, indicating serious structural problems.

What brought this on, in part, were new regulations requiring tanks not leak septage, Gustafson says. For the environment the rules are good because they keep untreated septage from filtering into the ground. In terms of the hydrogen sulfide problem the rules are not so good because the new tightness of concrete tanks means hydrogen sulfide gas cannot seep out along with septage.

Concrete Combinations

Early on there was talk that poor concrete mixes led to deterioration, but this idea did not stand up to what contractors saw in the field. In one subdivision all the homes had concrete tanks made by the same company, and all homes drew water from the same source, yet only one-third of the tanks showed deterioration, Gustafson says.

Septic tank deterioration has been a topic in only a few places in the country, notably Oregon and Wisconsin. Gustafson wonders if the problem isn't more widespread but hasn't been found because no one is actively looking for it.

Ty Gable, president of the National Precast Concrete Association (NPCA), believes it is a strictly limited problem. The organization has an extensive system for members to report problems. Based on those reports – the association has members in all 50 states, nine Canadian provinces, and 13 other countries – deterioration is localized and rare, he says.

The NPCA has been concerned about tank deterioration for some time and six months ago launched a research project in connection with Purdue University. That institution has one of the best and best-equipped concrete materials laboratories in the world, Gable says. “We have about 2,000 years of experience with concrete, so we understand what results in really good, structurally sound, watertight concrete – and what happens if you don't do those things,” Gable says.

Root of the issue

Good concrete practice is only a starting point, however. Nature adds other factors to the mix. To learn what may be promoting deterioration the NPCA project is looking at three broad areas: soil, water chemistry, and concrete mix design. Mix design will look at whether there should be any changes or special recommendations in the concrete used for septic tanks. (In Germany several years ago, researchers developed an acid-resistant concrete for power plant cooling towers. Their mix was designed to minimize the amount of binder and maximize the dense packing of aggregate.)

Other researchers on the team will look at the soil — how porous it is and also its chemical composition to see what may aid deterioration. The same will happen with water chemistry, analyzing it and seeing how it fits into the larger picture. There's a bacteriologist on the project, too, who will study the mix of microorganisms in septage. The question to be answered here is whether some alteration in the microscopic ecosystem is promoting a larger population of hydrogen-sulfide-generating

bacteria, or whether those bacteria themselves have changed. These are only the initial questions. As in other fields of science, answers are likely to bring

more questions. “The scope of [the project] continues to expand as we get more curious,” Gable says. “The more we learn the more we want to try.” The hope is to have some preliminary conclusion in about a year, he says.

Related: [Troubleshooting Tips: Tanks and Risers](#)

While they wait for clearer answers and solutions, septic professionals may find hope in doing what they do every day. This is one case, Gustafson says, where regular maintenance can identify a problem before it becomes a disaster.

ANTIMICROBIAL AGGREGATES FROM THE IN-SITU CONTROL OF MICROBIALY INDUCED CONCRETE CORROSION

The below excerpts taken from an over 200-page thesis written by Alejandro Caicedo-Ramirez

This type of corrosion occurs as a result of ubiquitous microbiological sulfur cycling within sewers: Below the waterline, sulfate present in wastewater is reduced to sulfide (H₂S) under anoxic conditions; this partitions into the headspace of pipes and other wastewater structures as H₂S gas, which serves as a substrate for biofilms of acidogenic sulfur-oxidizing bacteria (SOBs) above the waterline. These biofilms produce sulfuric acid, which chemically dissolves the cement binder and compromise the concrete structure. While current mitigation technologies focus their attention on developing acid resistant materials, little research has been done on limiting acidophile development in these environments.

Concrete is the most common material used to transport storm water and sewage in the world. It is used for pipes, culverts, tunnels and variety of other subterranean appurtenances. Municipalities, water utilities, and many agencies recognize that concrete corrosion is emerging as one of the most serious problems plaguing this critical infrastructure. The dominant form of concrete deterioration in wastewater conveyance systems is microbially mediated (Microbial Induced Concrete Corrosion: MICC). This type of corrosion occurs as a result of ubiquitous microbiological sulfur cycling within sewers: Below the waterline, sulfate present in wastewater is reduced to sulfide (H₂S) under anoxic conditions; these partitions into the headspace of pipes and other wastewater structures as H₂S gas, which serves as a substrate for biofilms of acidogenic sulfur-oxidizing bacteria (SOBs) above the waterline. These biofilms produce sulfuric acid, which chemically dissolves the cement binder and compromise the concrete structure.

While current mitigation technologies focus their attention on developing acid resistant materials, little research has been done on limiting acidophile development in these environments. In response to the current research gaps in this arena, the central aim of my work was to study the effects of substituting metal-impregnated sorbents for a fraction of the fine aggregates traditionally used in cements – for the express purpose of inhibiting the bacterial communities responsible for the corrosion in sewer systems.

Laboratory investigations evaluated the inhibition potential of selected heavy metals against SOB communities, and resolved minimum inhibitory concentrations, individually and in combinations. Parallel studies characterized different sorbents along with their metal desorption profiles in response to biogenic acid. Field studies in the Denver Metropolitan wastewater collection system, then assessed anti-corrosion performance of cement mortar formulations with different loads of metal-impregnated sorbents.

Ventilation can also remove hydrogen sulfide gas from sewer headspaces. This approach is used in WWTP where air is withdrawn from the headspace and either treated separately or piped to an existing biological process [20]. Ventilation for conveyance systems is limited by the costs associated to mechanical ventilation, relatively short-term effectiveness, and the discharge of H₂S to the ambient surroundings.

USDA PROJECT UTILIZING AGRO-WASTE

In June COWRA received an email from:

M. Z. Naser, PhD, PE | Assistant Professor
Glenn Department of Civil Engineering,
AI Research Institute for Science and Engineering
College of Engineering, Computing and Applied
Sciences, Clemson University

See two inserts referencing these projects Seed Project - Digital Twin Platform

M. Z. Naser is part of a team that is developing a research proposal to the USDA. Our proposal aims to recycle agricultural byproducts as fillers to create green concrete. We will be using both physical tests and machine learning to further our understanding of how we can better transform agro-waste into green concrete.

Big picture:

The USDA is asking for projects that can utilize agro-

waste to create new products with the potential for large-scale applications. I am attaching two (1-pagers) for the projects we are pursuing at the moment:

1. The first is a large project that includes a couple of PIs (from Clemson University). In this project, our goal is to identify crop waste/seeds/ashes/by- & co-products that can be used to replace cement/aggregates/fillers commonly used in concrete, or those that can be added to develop concrete derivatives with unique properties. Given the scope and size of this project and the fact that it can take 4-5 years to complete, it is ambitious and focuses on fundamental research (with a bit of applied research).
2. In addition, and since I am an assistant professor, the USDA also allows me to submit a seed proposal (small in scope, 1-2 years) that focuses more on applied research complimentary to the large project.

To show synergy with the large project, the goal of the seed proposal is to carry out preliminary tests on concretes made from plastic waste taken from farms (greenhouses, PVCs, mulch etc.) and wastewater generated in irrigation.

CODE ADVISORY COMMITTEE

The State of Connecticut will be revising the 2018 Technical Standards for Subsurface sewage disposal Systems in January, 2022. Many of the changes that will be in the 2022 Technical Standards will be to clarify language while other changes will need to be noted.

The complete summary of Proposal Revisions will be found in the insert included with this newsletter.

COWRA'S NEW USER-FRIENDLY WEBSITE

COWRA has launched its new website, making it easier for consumers to find our members, and for our members to find our suppliers. We will have an online payment option for membership renewals and COWRA courses uploaded soon.

COWRA is asking all our members to please take the time each year to fill out and return their renewal forms. We want to provide the most current and accurate information of our membership so that consumers can find your company easily on our website.

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FORWARDING SERVICE REQUESTED

UPDATES!! Accepting applications for COWRA's 2022 Installers & Cleaners Courses

You **MUST** contact the Department of Public Health to register for the Installers & Cleaners Exams. Please Note: Attendance at the COWRA Installer School **DOES NOT** register you for the State exam. Please contact D.P.H. at 860-509-7296 for any information pertaining to your results and license. You may also contact them by going to www.dph.state.ct.us/licensure/apps/subsew.pdf

2021 and 2022 Examination Schedule Subsurface Sewage Installer/Cleaner

Please Note: Soon the DPH will provide a program for those waiting to take the Installer and Cleaner exams. Applicants who mail in their application and other related form will be notified as soon as the exam program is implemented

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