



Topic: Advanced Methods for Mass Flux Characterization in NAPL Zones

Speaker: Michael Gefell, PG, CPG, Principal Scientist, Anchor QEA, LLC

Time: Tuesday, January 8, 11:30am-1pm

CEMS has received one (1) CLE for this presentation

At nonaqueous phase liquid (NAPL) sites, including petroleum facilities, manufactured gas plants, and wood-treating sites, NAPL mobility and aqueous-phase concentrations emanating from NAPL zones directly affect mass flux, risk and remedial design. These considerations are particularly important when NAPL is present in sensitive ecological settings such as sub-aqueous sediment and shoreline areas, but they also apply to NAPL zones farther upland. NAPL effective hydraulic conductivity (K_n) strongly affects NAPL mobility and can be estimated based on laboratory NAPL mobility tests. These tests impose hydraulic gradients orders of magnitude stronger than those that exist in situ. If NAPL in a given test sample is immobile under these test conditions, that NAPL is also immobile in the field. If NAPL is mobilized during laboratory tests, multiple lines of evidence should be used to interpret whether the NAPL is above or below the residual saturation under field conditions. NAPL movement during a laboratory test can be used to quantify K_n and significantly improve the conceptual site model. K_n values at some sites are so low that the NAPL is functionally immobile even if it is above the residual saturation. If NAPL is immobile or can be contained by an engineered remedy, aqueous chemical concentrations and fluxes drive risk and remedial needs. However, measuring dissolved chemical concentrations in a NAPL zone is challenging. Any NAPL mass included in a water sample or adhered to a passive hydrophobic sampler is included in the reported aqueous concentration, thereby overstating actual aqueous concentrations. Porous, hydrophilic, ceramic capillary barriers can be used to exclude NAPL and collect representative porewater and groundwater samples by diffusion or pumping, even in direct contact with NAPL. In combination, the methods presented herein significantly advance our ability to quantify mass flux associated with NAPL zones.

For complete topic information, a full biography, and reservations, please follow this link: [CEMS January Luncheon](#)

LOCATION: The EPA Conference Center located on the 2nd floor of the EPA Region 8 Headquarters building at 1595 Wynkoop St. When entering the building, visitors will be asked by the building security guards to display valid photo identification, pass through airport type security machines, sign in at the lower front desk, and wear a temporary EPA visitor badge. Then please proceed to the second floor to register with the CEMS representative.

MEETING FORMAT: Members may either bring their own lunch and attend the meeting for no charge, or they may request that CEMS order a box lunch for them. The cost of the box lunch for members is \$16.00; for non-members, \$19.00.

RESERVATIONS: PLEASE give your name, company name and phone number via email to admin@coems.org. PLEASE INDICATE IF YOU ARE RESERVING A BOX LUNCH OR BRINGING YOUR OWN. Reservations must be received BEFORE Friday, January 4, 2019 at 5:00PM. No reservations will be taken after this date! Payment of \$16.00 for members, \$19.00 for non-members will be accepted at the door with prior reservation. Please cancel your reservation by Friday, January 4, 2019 if you are unable to attend. It is the policy of the Society to bill for meals reserved but unclaimed. You may also pay with credit card via PAYPAL by following this link: [CEMS January Luncheon](#)

Notice: CEMS would like to thank EPA for the use of meeting space and would like to emphasize that the use of EPA space does not constitute endorsement of CEMS, sponsors of CEMS functions, or the content of CEMS workshops or meetings.

From the Board...Reflections on the Year Gone By, and a Look at the Year Ahead by Steve Brauner, CEMS President

Happy New Year from the CEMS board! Looking back on 2018, I'm thankful and fortunate to have accomplishments to be proud of while, of course, recognizing a few things could have been done better. I encourage each of you take stock during this change in the calendar year to celebrate your successes, reflect upon and learn from any missteps you may have experienced, and remember that your connection with and support from family, friends, and professional colleagues is likely stronger and wider than you may appreciate until you really need them. Over the last month, the outreach and support I have received through my connections with CEMS during an unplanned transition from my previous professional engagement to the next has been incredibly helpful and more deeply appreciated than words can do justice – thank you.

During times of transition, I have found it important to understand and internalize “why” one might pursue a particular path before exploring the “how” and “what” questions. To put it another way, finding the answer to the “why” question, whether as an internal reflection or in earnest conversation with others, provides an entry point to uncovering the deeper meaning in our professional and personal lives, which can also inspire others to action. My first exposure to this concept was through Simon Sinek's TED talk entitled “How Greater Leaders Inspire Action” (<https://tinyurl.com/no2amqu>) - it is worth a listen for those who interested to hear more from an expert in the leadership field.

Over the next year, one of my goals is to learn your answers to the “why” question, both from the perspective of why you are a member of CEMS, but also why you continue to pursue environmental management as your chosen career. I also encourage you to use the “why” question to stimulate deeper conversations with fellow CEMS members. I also hope to learn more of what you want from CEMS in 2019 and beyond – this feedback is critical for the board to set the course to meet the needs of our members.

In 2019, I will work closely with the board and committee chairs to maintain the strengths of our organization, which I see as both the educational mission described quite nicely by incoming Vice President Brian LaFlamme (Nationwide Environmental Services) in the November newsletter, and providing a forum for networking and personal connection between regulators, attorneys, consultants, contractors, and owners as we collectively work to effectively and efficiently implement environmental management in Colorado and beyond. I will also be focused on increasing the participation of the regulatory community at CEMS events. This initiative has gotten off to a great start through the additions of Steve Dymont and Rob Herbert as our new EPA and OPS liaisons, respectively. Their energy and enthusiasm, paired with the long-term, steadfast support from Fonda Apostolopoulos (Board Member and CDPHE liaison) holds great promise for achieving this goal in the year ahead.

(Continued on Page 6)

2019 CEMS Officers:

President: Steve Brauner, PhD, PE, SteveBrauner@hotmail.com, (303)328-7982
Vice-President: Brian LaFlamme, Nationwide Environmental Services, Inc., (303)232-2134, blaflamme@nationwideenv.com
Secretary: Noreen Okubo, (303)312-6646, noreen.okubo@gmail.com
Treasurer: John Fontana, Vista GeoScience, (303)277-1694, jfontana@vistageoscience.com
Past President: David Lipson, PhD, PG, HRS Water Consultants, Inc., (303)462-1111 Ext. 306, dlipson@HRSWater.com
CDPHE Liaison: Fonda Apostolopoulos, CDPHE, (303)692-3411, fonda.apostolopoulos@state.co.us
US EPA Liaison: Stephen Dymont, US EPA Region 8, (303)312-7044, dymont.stephen@epa.gov
OPS Liaison: Rob Herbert, CDLE; Division of Oil and Public Safety, (303)318-8543, robert.herbert@state.co.us

Board Members:

Fonda Apostolopoulos, CDPHE, (303)692-3411, fonda.apostolopoulos@state.co.us
 Erik Gessert, PE, Terracon Consultants, Inc. (303)454-5277, erik.gessert@terracon.com
 Andy Horn, Westwater Hydrology LLC, (303)456-1981, Andy@WestwaterHydro.com
 Mike Jahn, Tasman Geosciences, Inc., (303)487-1228, mjahn@tasman-geo.com
 Maggie Mandell, PE, Versar, (301)943-2830, maggiemandell@gmail.com
 Evan Singleton, Gablehouse Granberg, LLC, (303)572-0050, esingleton@gcgllc.com

Committee Chairpersons:

Monthly Programs:

Andy Horn, Westwater Hydrology LLC, (303)456-1981, Andy@WestwaterHydro.com

Spring Movie Event:

Monica Genadio, Environmental Science Partners, LLC, (720)936-1694, mgenadio@gmail.com

Fall Conference:

Erik Gessert, PE, Terracon Consultants, Inc. (303)454-5277, erik.gessert@terracon.com

Golf:

Mike Jahn, Tasman Geosciences, Inc., (303)487-1228, mjahn@tasman-geo.com

Scholarship – Co-Chairs:

Fonda Apostolopoulos, CDPHE, (303)692-3411, fonda.apostolopoulos@state.co.us

Bruce Marshall, Marshall Environmental Solutions, LLC, Inc. (720)708-8329, bruce@marshallh2o.com

Website: Juliana Reid, CEMS, admin@coems.org

Products and Services



COLORADO ENVIRONMENTAL
MANAGEMENT SOCIETY

ENGINEERING, SCIENTIFIC, & LEGAL PROFESSIONALS

Advertise Your Business Here!
Please contact admin@coems.org
for pricing details.

For information on listing products and services in the CEMS newsletter, please contact CEMS at (303)674-9752 or admin@coems.org.

Presentation Opportunities for Upcoming CEMS Meetings

The CEMS Program Committee is currently searching for "interesting, topical and informative" presentations for our meetings in 2018 and beyond. This is a great opportunity to network with your peers, share information and technology, and become more involved with the environmental community. CEMS is interested in an assortment and variety of topics relevant to environmental and natural resources professionals. Each monthly presentation is roughly 50 minutes, followed by a question and answer period.

If you or someone you know is interested in presenting at our monthly meetings, or our annual conference, please feel free to contact our Programs Committee, Andy Horn at Andy@WestwaterHydro.com or Steve Truesdale at struesdale@ninyoandmoore.com.

Comments or suggestions from previous meetings, including the Annual Fall Conference, are also welcome. Let us know if we can publish them in the newsletter or website.

Looking for a New Position

CEMS posts many job opportunities on our website.

<http://www.coems.org/jobs>

If you or your company would like to post to our website, please just send over the job description, with contact information to admin@coems.org.

We also will post resumes for our members to help you find new opportunities.

RECRUIT AND PROFIT!!

Recruit a **NEW** member for CEMS and get a **box lunch** credit voucher! For each person or organization you persuade to join CEMS, you will be issued a **box lunch** voucher that you can apply to the CEMS fee of your choice, whether it be a luncheon, workshop or your own membership renewal. Note that you cannot take credit for a member's renewal. However, there is **NO LIMIT** to the number of vouchers you can accumulate. Just have the new member put your name on the referral portion of the Membership Application Form. And keep those new members coming!

CEMS Meeting Sponsorships

Sponsors for a CEMS lunch meeting are provided a table where brochures or other materials can be displayed. The cost to sponsor a CEMS meeting is \$30 for members and \$85 for non-members. The non-member rate includes a one-year CEMS individual membership. Please send your request to sponsor a lunch meeting to admin@coems.org.

CEMS REGULATORY UPDATE
FEDERAL AND STATE ACTIONS IMPACTING COLORADO

By Amanda L. Hemmerich
Burns, Figa & Will, P.C.
December 2018

On November 5, 2018 the 10th Circuit Court of Appeals ruled in favor of the U.S. Army Corps of Engineers' approval to store more water in Colorado's Chatfield Reservoir. The Audubon Society had challenged the Corps' decision under the National Environmental Policy Act and the Clean Water Act, arguing that the Corps decision was arbitrary and capricious. The Audubon Society of Greater Denver had argued that the Corps did not properly consider alternatives to the Chatfield Reservoir expansion, which calls for flooding more than 500 acres of park land. But in a unanimous opinion, the court said the Corps adequately analyzed feasible alternatives and identified the least environmentally damaging one. The decision will allow work to continue on the \$180 million project, which began in late 2017 and is scheduled to be completed in 2020. It was approved by the Corps in May 2014. The Opinion can be found here: <https://www.ca10.uscourts.gov/opinions/18/18-1004.pdf>.

On November 16, 2018, the Colorado Air Quality Control Commission approved new low emission vehicle (LEV) standards for new light-duty and medium-duty motor vehicles sold in Colorado beginning in the 2022 model year. The new standards are estimated to reduce carbon dioxide emissions by nearly 2 million tons annually by 2030. The press release may be found here: <https://www.colorado.gov/pacific/cdphe/LEV-standards>.

On November 15, 2018, the Environmental Protection Agency (EPA) concluded the reconsideration of an earlier action that the EPA published on January 15, 2009, titled "Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Aggregation and Project Netting." The 2009 action clarified implementation of the New Source Review (NSR) permitting program under the Clean Air Act with respect to treating related physical or operational changes as a single "modification" for the purpose of determining NSR applicability at a stationary source. On April 15, 2010, the EPA proposed to revoke the 2009 NSR Aggregation Action. After a review of the public comments received on that proposal, the EPA has now decided to not revoke the 2009 NSR Aggregation Action. The EPA is, therefore, retaining the interpretation set forth in the 2009 NSR Aggregation Action, while not adopting any changes to the relevant rule text. At the same time, the EPA is using this present action to clarify the implications of the 2009 NSR Aggregation Action for EPA-approved permitting programs. This action also lifts the administrative stay and announces the effective date of the 2009 NSR Aggregation Action. The final action can be found here: <https://bit.ly/2UAQXHx>.

On November 29, 2018, the EPA entered into a Memorandum of Understanding (MOU) with the non-profit, educational organization known as STRONGER (State Review of Oil and Natural Gas Environmental Regulations) to facilitate greater collaboration and to achieve greater success in the effort to protect human health and the environment. The MOU objectives are to: (1) affirm EPA's commitment to meaningful participation in STRONGER's efforts to develop guidelines for state oil and natural gas environmental regulatory programs, conduct reviews of such programs and publish reports of those reviews, and (2) improve communication, coordination and collaboration between EPA and STRONGER on responsible oil and natural gas exploration and development activities. The MOU can be found at <https://bit.ly/2RFgQUq>. The press release can be found at <https://bit.ly/2PotnKe>.

MEMBERSHIP – RENEWALS AND NEW MEMBERS

A big thank you to all those members who renewed, and welcome to our newest members.

Renew – Individual

Joseph B. Dischinger, Fairfield and Woods, P.C.
 Robin Fryberger, Sundance Environmental Consultants, Inc.
 Heather Wood, Tetra Tech, Inc.
 Evan Singleton, Gablehouse Granberg, LLC
 Laura M. Tobin, WSP
 Richard Townsend, Historical Information Gatherers

New – Individual

Andre Gratto
 Matthew Jorden, Dakota Technologies

Renew – Corporate

CDM Smith, Inc.

Mark Allen	Paul Anderson	Wardah Azhar	Jeff Bamer	Brian Bennett
Eleonora Borisova	Todd R. Bragdon	John Bratby	Doug Brown	Todd E. Burgesser
Dave Chamberlin	Kris Chapman	Tom Charles	Doug Cushing	Rebecca Dunavant
John J. Eisenbeis	Michael Fischer	Erin Formanek	Steve Fundingsland	Jessica Gilliam
Joshua Goldman	Elias Gruber	Andrea Harbin	Jared Kain	Mike Lamar
Karla Leslie	Mark McCluskey	Catherine McIntosh	Brian McKee	Geoffrey McKenzie
Stephanie Mericka	Tyler D. Miller	Dan Molnar	Jeff Montera	Susan Morea
Frank Morris	Chris Nazar	Brian O'Connor	Roger Olsen	Robbie Parsons
Eleanore Pitney	Sam Plaza	Henry Poburka	Alesandra Reed	Keegan Roberts
Natalie Ross	Emma Rott	Tim Rynders	Chris Schulz	Shilpa Shivakumar
Maria Cristina Silva Lemes		Nathan Smith	Neil Smith	Kent Sorenson
Garrett Sprouse	Chris Stillwell	Ravi Subramanian	Russell Tamblyn	Jillian Vandegrift
Tea Vrtlar	Kelsey J. Waage	Jacqui Wesley	Jordan Williams	Derek N. Wintle
John Wondolleck	Lynn Woodbury	Ryan Wymore	Cherie A. Zakowski	

Clean Harbors Environmental Services

Justin Anderson	Michael Bannister	George Cebula	Clyde Christman	Jamie Creekmore
Tim Francis	Kevin Gaff	Suzanne Holdaas	Jack Iarusso	Jack Kehoe
Brian Kindsvatter	Ryan Meron			

McCoy and Associates

Paul Gallagher	Eric Weber	Robyn Weber
----------------	------------	-------------

CEMS is now issuing a Certificate of Participation for every presentation offered. We will send the Certificate to attendees after every presentation via email.

From the Board (continued from page 2)

Before closing this column, I also wanted to recognize the excellent leadership, counsel, and friendship provided by outgoing past-president Brad Coleman (Burns and McDonnell), outgoing president Dave Lipson (HRS Water Consultants, Inc.), and the other members of the 2018 board. You are all top-notch professionals and people, and it has been a pleasure to serve with you. As some of you are aware, 2018 was Joe Dischinger's (Fairfield and Woods, P.C.) final year of service to the board, after having served in this capacity for more years than Joe would probably like to admit. We all thank you, Joe, for your service, dedication, and positive outlook, and are glad to know that you will remain involved with CEMS going forward. I also can't say enough about the job that Juliana Reid, our dedicated and extraordinarily capable administrative assistant, does to keep us organized and headed in the right direction. Both Brian LaFlamme and I look forward to building upon the excellent foundation you all have laid for CEMS. It is also my pleasure to welcome Mike Jahn (Tasman Geosciences) and Evan Singleton (Gablehouse Granberg, LLC) as two new board members for 2019 – we look forward to your contributions and fresh perspective going forward.

In closing, the events of 2018 have again reminded me that one of the few constants is change, and that whenever one door closes, other doors will open if you allow yourself to see the new possibilities by embracing that change with curiosity and wonder. As such, it is with great curiosity, wonder, and excitement that I look forward to seeing what 2019 brings. Happy New Year and thank you for being a member of CEMS.

Steve Brauner, Ph.D., PE thrives on using his 18 years of experience to design and implement approaches that achieve cost-effective, optimized remediation of contaminated soil and groundwater. Dr. Brauner has managed multidisciplinary technical teams and led regulatory negotiations under CERCLA, RCRA, and state jurisdiction to achieve complete or partial shutdown of active remediation systems that were no longer effective at achieving remediation endpoints. He has also designed and implemented innovative approaches that quantifiably improved the performance of existing remedies. Dr. Brauner earned his Bachelor of Science degree in Civil Engineering from Lehigh University and both his Masters of Science and Doctor of Philosophy degrees from Virginia Tech. He is a devoted husband and father who enjoys spending his free time trail running, skiing, and otherwise exploring all that Colorado has to offer.