SoCal SETAC News

Society of Environmental Toxicology and Chemistry

Southern California Chapter

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FEATURE ARTICLE

Managing Microplastics: Policies, data gaps, and steps forward

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Microplastics have become a common topic of discussion and investigation in the fields of toxicology, chemistry, and risk assessment. The sheer magnitude and extent of plastic pollution across all environments, combined with their potential persistence and ability to absorb other pollutants has made this an issue of global concern. In fact, many of our own SoCal SETAC members are currently participating in microplastic research as showcased in previous newsletter feature articles and annual meeting presentations. Fundamental questions continue to be investigated regarding the sources, toxicity, and fate of microplastics. Meanwhile, many public agencies in California and throughout the world have been working to understand when, where, and how to monitor for these emerging contaminants.

Why are microplastics an issue?

Microplastics are small (< 5mm) pieces of different types of plastic. Some microplastics are intentionally fabricated to be tiny pieces of plastic (primary microplastics), which include microbeads in face and body scrubs and industrial cleaning products. Many more microplastics are formed when larger plastics are broken down in the environment (secondary microplastics). Examples include tire wear dust, Styrofoam, and microfibers from synthetic clothing.

Studies have shown that microplastics are pervasive in wastewater, rivers, stormwater and the ocean and are transported via these conduits as well. A sediment survey of the Southern California Bight, as part of a large regional survey (Bight'13) showed that microplastics in the 1-5mm size range were found in 38% of the sediments. Other studies have shown microplastics increase offshore during and after storms. The abundance of microplastics, particularly in the smaller size classes, is not known for most habitats. What is becoming clear is that microplastics are found in dozens of species across ecosystems, highlighting the pervasiveness of this contaminant.

Plastic debris captured on the banks of the San Gabriel River after a recent storm

President's Corner

Chris Stransky, Wood E&I

Greetings and Happy New Year. It's hard to believe we're in 2019 rapidly closing in on 2020 - the 20th year of the 21st century or third millennium! This sounds so futuristic. Indeed technology and science will continue advancing rapidly, but I'm guessing we won't live in green eco-friendly houses in the sky or under the ocean quite yet. There's still much work to do. In the environmental field it's certainly an exciting time with the continued discovery of new monitoring and assessment techniques, as well as the tried and true methods that have been used for decades; both showcased extensively at the National SETAC Meeting in Sacramento. One of my favorite sessions was on biological and instrumental methods to detect harmful algal blooms and associated toxins which seems to be an (cont. pg 3)

INSIDE THIS EDITION

FEATURE ARTICLE (continued)

Plastic debris at Bolsa Chica State Beach in Huntington Beach Ca.

Regulatory and legislative bills/laws on microplastics

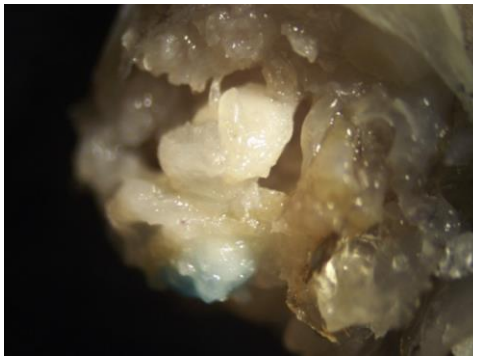
Microplastics have become an issue of great visibility and interest to the public and regulatory community. While more data is needed to better understand the toxicity and health implications of microplastics, it is clear that policies are needed to control their production and movement into ecosystems. Within the last few years, several successful microplastic-related legislative and regulatory efforts have been created and adopted. Here are a few of the landmark policies that are paving the way towards the management of microplastics:

- **HR 1321: The Federal Microbead-free Waters Act (2015):** This bill amends the Federal Food, Drug, and Cosmetic Act to ban the manufacturing of rinse-off cosmetics that contain intentionally-added plastic microbeads beginning on July 1, 2017, and to ban their sale/delivery as of January 1, 2018.
- **AB 888: California Plastic Microbeads Nuisance Prevention Law (2015):** This bill prohibits, on and after January 1, 2020, a person from selling or offering for promotional purposes a personal care product containing plastic microbeads that are used to exfoliate or cleanse in a rinse-off product in the State of California.
- **SB 270: Single-Use Carryout Bags (California Proposition 67 – Plastic Bag Ban; 2016):** Most grocery stores, retail stores with a pharmacy, convenience stores, food marts, and liquor stores will no longer be able to provide single-use plastic carryout bags to their customers. Instead, these stores may provide a reusable grocery bag or recycled paper bag to a customer at the point of sale at a charge of at least 10 cents.
- **SB 1263: California Statewide Microplastics Strategy (Ocean Protection Council (OPC); 2018):** Requires the OPC to adopt and implement a Statewide Microplastics Strategy related to microplastic materials that pose an emerging concern for ocean health. This bill authorizes the OPC, in collaboration with the State Water Resources Control Board, the Office of Environmental Health Hazard Assessment, and other interested entities, to provide funding to research activities that would address gaps in microplastics knowledge and would contribute directly to the development of the Statewide Microplastics Strategy.
- **SB 1422: California Safe Drinking Water Act (2018):** The California State Water Resources Control Board has been charged with defining microplastics and developing standardized methods to determine levels within drinking water.

Knowledge gaps: What scientific information is most needed?

It has become clear that there are several important knowledge gaps that need to be filled before we can continue to implement appropriate policy to protect public and environmental health. These include:

- Environmentally relevant toxicity: Using laboratory studies with environmentally relevant concentrations of microplastics, at what concentrations do we observe health effects to organisms? What types of organismal or sub-lethal impacts are observed and are there commonalities between species? Most importantly, can these results be validated in field studies?
- Microplastics as a vector for pollutants: Do microplastics act as a source and vector for hazardous pollutants at environmentally relevant scales?
- Standardized methods: Standardized methods for the collection, extraction, and quantification of microplastics in samples ranging from sediment to ambient water to wastewater to drinking water are badly needed. Standardized methods will enable consistent and reliable data collection that can be compared across studies and environments.



Fish stomach dissection under a microscope showing plastics and plankton

How are SETAC scientists helping to advance the field?

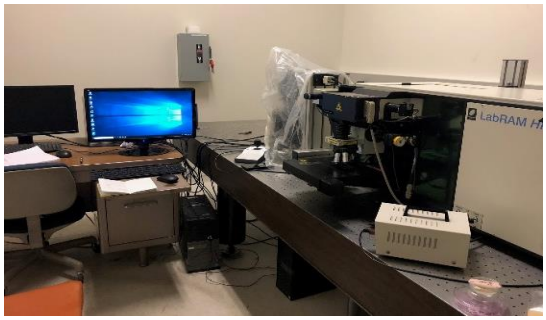
- A SETAC Global Interest Group (IG) was recently created in 2018 to provide an official platform for information sharing, method harmonization and collaboration of microplastics to facilitate increased understanding and effective management. The mission of the SETAC Microplastic IG is to support the advancement of scientific research regarding the sources, fate and effects of microplastics of various sizes and types, now found in every part of the environment, from lakes, rivers and oceans to agricultural soils. To join and receive updates from the IG, follow the link above and sign up. Everyone is welcome to join.

Feature Article (continued)

- To address the need for standardized methods, a workshop entitled Measuring Microplastics: A Workshop Towards Building Best Practices for Sampling, Extraction and Analysis will be held on April 4, 2019 at the Southern California Coastal Water Research Project's (SCCWRP) offices in Costa Mesa, CA. This workshop will be co-hosted by the scientific instrumentation company HORIBA, the University of Toronto and SCCWRP.

  This workshop will bring together microplastic experts from around the world to explore a path toward method standardization. The workshop will be conducted in collaboration with the State of California Water Resources Control Board and the California Ocean Protection Council, which have legislative mandates as described above to develop standardized microplastics monitoring methods for both ocean and drinking waters.

  The workshop will be open to the public to hear from experts about the latest advances in sampling and measurement and will summarize the state of the science and recommend studies to California management agencies to invest in to better achieve method standardization and increase method repeatability.



Raman spectroscopy for confirmation of plastic polymer type

To sign up for this workshop visit microplasticworkshop.eventbrite.com (space is limited), keep abreast of the progress and results coming out of the workshop visit http://bit.ly/uplastic or contact Shelly Moore for more information

Measuring Microplastics:
Workshop Toward Building Best Practices for Sampling, Extraction and Identification

April 4th, 2019
at
SCCWRP in Costa Mesa, CA
Sign Up: microplasticworkshop.eventbrite.com
Contact: shellym@sccwrp.org

PRESIDENT'S CORNER (continued)

increasing phenomenon nationally. Remote sensing and GIS continue to provide new sensors and powerful spatial analysis techniques in this area of research and others. Other sessions dedicated to the latest and greatest included advancements in epigenetics, immunotoxicology, in situ monitoring methods, and high throughput screening techniques to rapidly assess potential chemical impacts. There was also once again a number of great sessions centered on emerging chemicals of concern including perfluorinated compounds, personal care products, pesticides, and flame retardants. The interesting and concerning effects related to microplastics also had a big presence in Sacramento as also highlighted at our last annual meeting at Loyola Marymount. Of course, many of our very own SoCal SETACers presented and are on the very forefront of these cutting edge efforts (please have a look at our many presenters in the last newsletter and of course our feature article in the newsletter by Violet Renick and Shelly Moore). Another spotlight at the meeting that I found both interesting and super important were discussions on ethics and bias in environmental research. There are many pressures in our world and desires to see data that tells us what we want, particularly when big dollars are at stake. Being open minded and honest is important.

At the National Meeting our local Chapter had a lively get together at Empress Tavern. It was so nice getting out to connect with so many of you including new and old acquaintances. I was anticipating about 15 to 20 to show and I think we ended up with 40+ to the surprise of the bar staff thanks to everyone's enthusiasm and some of our neighboring NorCal SETACers joining. The Tavern was underground, covered inside top to bottom in brick and had a curved roof and arches over the booths. They also had some interesting and tasty cocktails too like the Gimlet and Moscow Mule – yumm!

We have an exciting year ahead of us. Speaking of cutting edge, during our next dinner meeting in early March we look forward to an intriguing presentation and discussion by Dr. Regina Wetzer of the Los Angeles Natural History Museum on the development and application of techniques to analyze environmental DNA to characterize fish and invertebrate populations

We also will be having our annual meeting at the beautiful Seaside Forum at Scripps Institution of Oceanography in La Jolla on May 6-7th. There will be a special session on whole effluent toxicity testing and high throughput screening plus the usual open forum for other topics of interest. Check out the announcement inside and stay tuned for more.

Finally, I would like to extend a big thanks to Nicole Parker, Mary Woo, Karin Wisenbaker, and Joe Freas for volunteering at the Cal State University Channel Islands Science Carnival in November. Outreach and education to our future scientists and the general public is a core value of our Chapter. It takes some work to plan but sharing and seeing the excitement, particularly with the touch tank critters, is always rewarding (see pics pg 9). I highly encourage you all to participate in these opportunities.

MEET THE BOARD

Wendy Hovel

Wendy enjoying the beautiful SoCal weather

Hello SoCal SETAC members! I'm Wendy Rose Hovel, currently enjoying my second of two years on the board (2018-19), and formerly SoCal SETAC secretary (2011-13). I am grateful to be involved in SoCal SETAC because it has given me the opportunity to meet people from all over the SoCal region with a wide range of careers yet overlapping interests. I hope you enjoy my story!

I grew up in the country in Wisconsin (yes, I'm a cheesehead, and I love cheese curds, the Packers and ice hockey!) where I enjoyed lots of outdoor, snowy activities like cross country and downhill skiing. I was always interested in wildlife (dogs too!) so after high school I obtained a B.A. in biology from St. Olaf College in Minnesota and following a year off and a fantastic trip to Europe, went to the Virginia Institute of Marine Science (VIMS) at the College of William and Mary, where I obtained a M.S. in Marine Science. Like many young biologists, I initially thought I might study dolphins and whales, but when it became apparent that there were few opportunities in this field, and that there was a lot of interesting research in other areas, I found myself studying the binding of contaminants to DNA in hemopoietic tissues of the killifish, otherwise known as the mummichog. I enjoyed my time at VIMS immensely due to the numerous festivities, beautiful national parks along the Colonial National Historic Parkway, and because I met my husband Kevin there.

My master's work led me to the University of California Davis, where I got my Ph.D. in pharmacology and toxicology. I did my research at the UC Davis Bodega Marine Laboratory in Bodega Bay, CA where I investigated apoptosis as a potential biomarker and mechanisms of cadmium - induced toxicity in estuarine fishes. I spent a good amount of time in graduate school driving up and down I-5 since by this time Kevin had gotten a job at San Diego State University as marine ecology professor. Consequently, when I finished my degree in the spring of 2005, I decided to focus my efforts on starting a career in consulting. After a short stint as a lecturer at the San Diego City College, I got a job at Weston Solutions where for almost five years I learned about applied toxicology: bioassay testing, contaminated sediment and toxicity evaluations, and everything dredging! I then moved onto Anchor QEA where I worked on many challenging projects involving sediment remediation and management, toxics TMDLs, everything related to PCBs, and risk assessment. Just a few short months ago, I started a job at Geosyntec in San Diego where I am doing similar work but also trying to diversify. For instance, I'm working on combined aquatic and terrestrial ecological risk assessments at a site along the Cuyahoga River in Ohio as well as overseeing a specialized toxicity testing program at an impacted site along the Toronto waterfront. I continue to enjoy consulting because you never know what new challenges each day will bring. It's fast and furious and not often dull, especially when paired with parenthood!

A family of sports fans!

MEET THE BOARD - Wendy Hovel (continued)

When I am not working, I love to hang out with my hubby - Kevin, our two boys – Will and Sam, and my two adorable rescue dogs – Athena and Kenzie. I like outdoor activities including visits to the beach going, hiking, swimming, playing sports, going to lacrosse games, and trying to beat my son Will at basketball. Being a mom is an amazing experience, and there is NEVER a dull moment. However, I always enjoy a night out, a good movie, classic Italian food, a decent Packers game, volunteering at school, and a great glass of wine. And, my favorite dessert of all times continues to be "Death by Chocolate" at the Trellis, in Williamsburg, VA. If you ever visit Williamsburg, and you love chocolate, you MUST go: https://www.thetrellis.com/death-by-chocolate/. And, in conclusion, "GO PACK GO!"

Wendy and her son enjoying some time on the ice.

Join us at for our Spring Dinner Meeting

March 7th at 6:30-8:30 PM

Speaker Regina Wetzer

LA Natural History Museum

Linking specimen-based marine biodiversity with state of the art genetic tools to greatly accelerate understanding of our changing oceans

BJ's Brewhouse in Westlake
Village 3955 Thousand Oaks Blvd.
Westlake Village, Ca. 91362

STUDENT CORNER

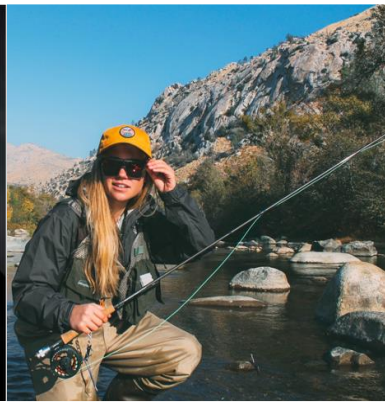
Our student research award recipients

By *Nicol Parker*

This year we received another round of great applications for the student research funds. In the end one graduate student and three undergraduate students received the award. We asked the students to describe their research interests, how the scholarship will aid in their work, future plans, and hobbies.

Nicolette Andrzejczyk

PhD Student, University of California, Riverside



Research

My current graduate research focuses on assessing the effects of diluted bitumen (dilbit), a form of crude oil, on fish health. This work is in partnership with the Experimental Lakes Area in Canada where dilbit is being applied within one of the lakes in the area. Following dilbit exposure, I will be using RNA sequencing to quantify transcriptional changes in lake trout and fathead minnows exposed to dilbit within the lake. Along with this, RNA sequencing of lake trout dermal mucus will be used to identify biomarkers of dilbit exposure within mucus that may later be used for non-invasive sampling. Outside of this project, I am also interested in the environmental occurrence of novel pharmaceutical disinfection products formed through the wastewater treatment process and their potential effects on aquatic biota.The SoCal SETAC student award provides me with the opportunity to propel our research forward by purchasing the necessary reagents and equipment to conduct our analysis and characterize the inhibitors. The grant will also provide sufficient funds for traveling to conferences to network with other researchers to promote discussion about the inhibition of cholinesterase enzymes.

The SoCal SETAC graduate research award will be used towards Illumina NextSeq500 sequencing which will reveal transcriptional changes in lake trout exposed to dilbit.

Inspiration for Current Research and Future Research Interests

As an undergraduate, I highly enjoyed the various biology and geoscience courses I took which led me to pursue summer research projects in those fields. After working on projects focusing on water quality and mercury contamination within the Finger Lakes watersheds, I became interested in the field of aquatic ecotoxicology. Along with this, I have always enjoyed fishing and other water sports so aquatic toxicology was also a personal interest of mine. Altogether, my previous experiences led me to continue my studies in aquatic ecotoxicology at the graduate level.

After identifying transcriptional changes induced by dilbit exposure, I would like to link those molecular effects to potential physiological/morphological impairments in juvenile and adult fish. Along with this, I would like to do more work on identifying the potential for non-invasive biomarkers of exposure to contaminants using mucus and fin clips.

Other Hobbies and Activities Fly fishing, surfing, snowboarding, being outdoors, music

Erica Choe

Candidate (2020) for a B.S. in Biochemistry, Minor in Bioethics Loyola Marymount University

Research

I am currently interested in research on polycyclic aromatic hydrocarbons and other volatile organic compounds that are present in the air. Specifically, I am interested in whether these

compounds, with potential carcinogenic effects as well as other health hazards, are being off-gassed by synthetic turf fields and in what concentrations they are being off-gassed. Turf fields are comprised of two parts: the synthetic grass and rubber granules that are made of recycled tire crumb rubber. Despite the fact that over 900 turf fields having been installed in parks, playgrounds and athletics fields in the state of California alone according to recent data recorded by the California Environmental Health Hazard Assessment Advisory Panel in 2018, little is known regarding the potential hazards surrounding long term exposure to them. My research topic is extremely relevant as there is a gap of knowledge regarding the concentrations of compounds that are being off-gassed from synthetic turf fields. Young children often play on these fields and they are inhaling fumes from these rubber turf granules

The SoCal SETAC student award will contribute to my research in allowing us to purchase more standards of compounds that we think are being off-gassed so that we can confirm the compounds as well as quantify the concentrations of compound.

Inspiration for Current Research and Future Research Interests

I became interested in my research after listening to a presentation that my research professor gave at my freshman biochemistry/chemistry seminar. I was extremely interested in her work because she had a larger, social justice focus to the research that she was doing and always found a way to tie in her work to address larger societal issues.

In the future, I am interested in pursuing a career in Pediatric oncology and thus I see much correlation between the research that I am conducting at the undergraduate level and future research that I would like to conduct as I pursue higher education. I am interested in environmental effects on cancer in children, specifically seeing if the environment pertaining to specific socioeconomic enclaves has an effect on the frequency of childhood cancers.

Other Hobbies and Activities

Volunteering with my service organization, Belles Service Organization, which has a focus on domestic violence awareness. I specifically volunteer at a café that provides nutritious meals to individuals experiencing homelessness in the Santa Monica area. Volunteering at Venice Family Clinic, one of the largest clinics in the Los Angeles area.

In my free time, I love to do modern calligraphy and hand lettering, as well as making different crafty things, usually inspired by Pinterest. Additionally, I like to run, travel, and bake intricate desserts!

Joseph Porges

Candidate (2019) for a B.S. in Marine Biology California State University of Long Beach

Research

Introduction of polycyclic aromatic hydrocarbons (PAHs) into the environment has increased due to the rise in human populations, general automobile combustion, and disasters such as oil spills and leaking crude oil pipelines. Crude oil spills, such as the Deepwater Horizon disaster in 2010, pose a major threat to the health of marine ecosystems through their introduction of large amounts of PAHs into the water. PAHs are known to disrupt cardiac function and cause malformed organs in exposed juvenile fishes. These impacts on cardiac function have been shown to be related, at least in part, to PAH driven changes in altered ion channel function. Interrupting ion channel regulation during critical early life stages in fish can severely damage physiological development in fish, reducing their overall fitness through reduced swimming speed or poor cardiac performance

Previous research by Incardona has shown that select PAHs alter the function of the L-type Voltage Gated Calcium Channel (LTCC), the potassium voltage gated channel (Knch6), and may alter ion regulation in the sarco/endoplasmic reticulum (SER), which may include unidentified impacts on the ryanodine sensitive calcium channel (i.e. ryanodine receptor, RyR). However, these studies focused solely on the impacts of phenanthrene on K+ ion movement through the Knch6 ion channel. My research with Dr. Erika Holland aims to more intensively study the specific mechanisms of Ca2+ dynamics related to transport across the LTCC membrane channel and intracellular RyR channel. Additionally, my research will further explore whether other PAHs target Knch6 and should include measures of the potential toxicity of oxygenated metabolites. I will address the effects of 15 parent and oxygenated metabolites on LTCC, RyR, and Knch6 channels in skeletal muscle, cardiac tissue, and brain tissue in zebrafish. This additional information will highlight mechanisms of PAHs and help our understanding

of the impact of crude oil mixtures on marine organisms. I believe that PAH oxygenated metabolites will more severely inhibit receptor activity than the parent compounds, altering physiology and reducing contractility in zebrafish.

The SoCal SETAC student award will help me purchase materials needed to create protein preparations and detect protein concentrations. This award will also go towards LSC fluid, glass fiber filters, and vials which are used to analyze receptor activity through radioactive ligand binding assays.

Inspiration for Current Research and Future Research Interests

My marine biology advisor at CSULB suggested that I try toxicology research and see if it was the right fit for me. After learning of the importance of the work in this field and the potential projects I could work on, I knew that I'd found my niche.

Since I am newer to the field of toxicology, I am excited to learn more about both environmental and human health toxicology studies. Currently, I would like to focus on the impact of pollutants (such as PAHs) on the marine environment or on human health. However, I am interested in the effects of a variety of toxins on organs such as the pituitary gland.

Other Hobbies and Activities

Volleyball, reading, journaling, and playing board games

Martin Yau, *Candidate (2020) for a B.S. in Chemistry California State University of Long Beach*

Research

My research with Dr. Jason Schwans at California State University, Long Beach, is interested in finding an effective and reversible inhibitor for cholinesterases, which were found to have different levels of activity in Alzheimer patients. There are two classes of cholinesterases, acetylcholinesterase (AChE) and butyrylcholinesterase (BChE), which have been found to have different active sites, where the AChE active site is smaller relative to BChE. We are planning to exploit this feature by focusing on BChE, principally due the fact that the biochemical role of BChE remains poorly understood.

Our research is focusing on the development on the class of organophosphorus compounds (OP). OP compounds target cholinesterases, which hydrolyze the neurotransmitter thus terminating a neurological response. To target the active site, we are synthesizing bulky thio OP compounds with alkyl substituents in attempt to make it selective towards BChE. Additionally, linking two OP compounds and creating bisthiophosphates have been suggested to be more potent inhibitors, as the compounds can inhibit the active site as well as the distal site. A challenge remains in identifying bisthiophosphates with a "linker" that can target both enzymatic sites. We will investigate a series of tetraalkyl bisthiophosphates as potent and selective BChE inhibitors and evaluate AChE/BChE selectivity, to identify compounds that may act as useful pharmaceuticals with minor environmental impact.

The SoCal SETAC student award provides me with the opportunity to propel our research forward by purchasing the necessary reagents and equipment to conduct our analysis and characterize the inhibitors. The grant will also provide sufficient funds for traveling to conferences to network with other researchers to promote discussion about cholinesterases.

Inspiration for Current Research and Future Research Interests

The college of natural science and mathematics had a poster session where professors present their research. Dr. Schwans was presenting about his research regarding the difference in active sites between AChE and BChE. We discussed about the potential therapeutics and impact that future research regarding the cholinesterases would have and I was interested by the medicinal applications. I felt that I could understand why he was conducting the research and its potential effects on patients.

I am interested in further characterization of BChE, such as uncovering the amino acids that compose the catalytic triad in the active and peripheral sites. Additionally, it would be beneficial to gain a deeper understanding of how BChE inhibition effects the body and discovery of target specific drugs to reduce the effects of Alzheimer's or other neurodegenerative diseases with minimal environmental impact.

Other Hobbies and Activities

I love spending time playing video games in an arcade with friends and family. I have also always been interested in the automotive industry and enjoy researching on the latest news in the automotive world or making little modifications to my car such as installing a back-up camera and footwell lights. If my friends and I have free time, we love to go out and take pictures.

Great Get-Togethers with a Great Group

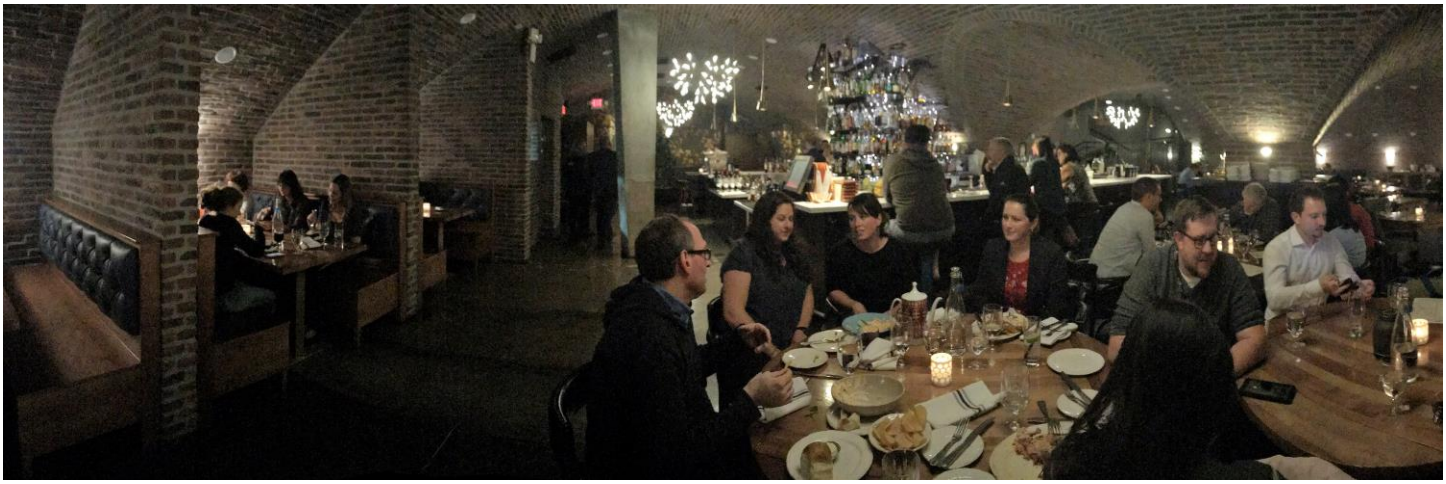
Science Carnival (Nov. 3rd, 2018)

By Mary Woo, Karin Wisenbaker and Nicol Parker

SoCal SETAC hosted a booth at the CSU Channel Islands 10th annual Science Carnival November 3, 2018. The Science Carnival took place at Rio Vista Middle School in Oxnard and was hosted by Professor Phil Hampton, CSU Channel Islands students and community businesses. This year 500 student and community volunteers and 2,800 K-8th-grade students participated. There were 100 different science activities run by science professionals or students studying science, technology, engineering or math. The carnival provides students with fun, hands-on activities including making glow in dark slimes, examining the effect of trajectory and air pressure of a marshmallow using an air powered shooter and searching for artifacts in a mock archaeological dig.

SoCal SETAC board members Karin Wisenbaker, Nicol Parker and Mary Woo hosted the "Touching the Sea" booth. It had several touch tanks with sea urchin, sand dollars, abalone and mussels, along with microscopes to view sea urchin embryos and different taxa of benthic infauna. Students and parents alike were fascinated with using the microscopes to study the organisms, touching the different biota, and learning about their characteristics, notably the Kraken appearance of the sea urchin mouth and that sand dollars are purple when alive and their use of cilia to move and eat. The message communicated to the students was not only of the biota uniqueness and beauty but their importance as indicator species to help us study the health of our water and sediment.

SoCal at Empress Tavern, Sacramento, for North American SETAC



Southern California Regional Chapter of the
Society of Environmental Toxicology and Chemistry

save the date

2019 ANNUAL MEETING

Monday & Tuesday May 6–7

Look for the Call for Abstracts in Early March

Robert Paine Scripps Forum for Science, Society and the Environment

Scripps Institution of Oceanography
8610 Kennel Way
La Jolla, CA 92037

more info to follow on our website
www.socal-setac.org/annual-meeting

CALENDAR OF EVENTS

March 2019

March 10-14 Society of Toxicology | *Baltimore, MD*

March 17-19 2019 WateReuse California Annual Conference | *Garden Grove, CA*

March 18-19 3rd International Conference on Ecology, Ecosystem and Conservation Biology | *Chicago, IL*

March 25-29 11th National Monitoring Conference | *Denver, CO*

March 31-April 4 ACS Annual Meeting | *Orlando, FL*

April 2019

April 9-12 CWEA Annual Conference 2019 | *Palm Springs, CA*

April 24-25 6th World Congress on Climate Change and Global Warming | *Vancouver, Canada*

May 2019

May 3 Southern California Academy of Sciences 2019 Annual Meeting | *Northridge, CA*

May 6-7 SoCal SETAC 2019 Annual Meeting | *La Jolla, CA*

May 19-22 20th International Symposium on Pollutant Responses in Marine Organisms | Charleston, SC

June 2019

June 26-29 Association for Environmental Studies and Sciences Conference 2019 | *Orlando, FL*

SOCAL SETAC OFFICERS AND BOARD MEMBERS

SoCal SETAC 2018–2019 Officers

Past President	**Keith Maruya,** Southern California Coastal Water Research Project keithm@sccwrp.org
President	**Chris Stransky,** Wood Environment & Infrastructure chris.stransky@woodplc.com
Vice President	**Erika Holland,** California State University, Long Beach erika.holland@csulb.edu
Treasurer	**Joe Freas,** Aquatic Bioassay and Consulting Laboratories Inc. Joe@aquaticbioassay.com
Co-Secretary	**Misty Mercier,** Physis Environmental Laboratories, Inc. mistymercier@physislabs.com
Co-Secretary	**Alvina Mehinto,** Southern California Coastal Water Research Project alvinam@sccwrp.org
Webmaster	**Violet Renick,** Orange County Sanitation District VRenick@OCSD.COM
Outreach Coordinator	**Denise Li,** City of Los Angeles denise.li@lacity.org

SoCal SETAC 2018–2020 Board Members

Board Member (2017–2019) Private	**Wendy Rose Hovel,** Geosytec whovel@geosyntec.com
Board Member (2017–2019) Student	**Scott Coffin,** University of California, Riverside scoff003@ucr.edu
Board Member (2018–2020) Public	**Jun Zhu,** Los Angeles Regional Water Board jun.zhu@waterboards.ca.gov
Board Member (2018–2020) Academic	**Amro Hamdoun,** University of California, San Diego - Scripps Institution of Oceanography ahamdoun@ucsd.edu
Board Member (2018–2020) Private	**Karin Wisenbaker,** Aquatic Bioassay and Consulting Laboratories Inc. karin@aquaticbioassay.com
Board Member (2018–2020) Student	**Nicol Parker,** University of California Santa Barbara nparker@bren.ucsb.edu
Board Member (2018–2020) Public	**Nicholas Hayman,** SPAWAR Systems Center Pacific (SSC Pacific) nicholas.hayman@spawar.navy.mil
Board Member (2018–2020) Academic	**Mary Woo,** California State University Channel Islands mary.woo@csuci.edu

Nautilus Environmental, Inc. is now Enthalpy Analytical

(San Diego, CA) -- Nautilus Environmental, Inc. announces its official transition to Enthalpy Analytical (Enthalpy), a subsidiary of Montrose Environmental Group (Montrose). Nautilus was the first toxicity laboratory to join Enthalpy in 2016, followed by EnviroSystems, Inc. on the East Coast in 2017. Now, Nautilus and EnviroSystems have rebranded to form the foundation of Enthalpy's environmental toxicology service offerings across the United States.

Since its 2004 founding, Nautilus' services have continued to expand to include study design, method development, planning, review, quality assurance, and regulatory support as well as the analysis, integration, interpretation, validation and application of toxicity data. The 18,000 square foot San Diego laboratory has the largest West Coast capacity committed to toxicological testing, specifically designed and staffed to perform the full variety of toxicity and bioaccumulation tests across all matrices including waters, sediments, soils, chemicals, and products.

In 2016, Nautilus joined Montrose, a rapidly growing environmental services provider offering measurement and analytical services as well as environmental resiliency and sustainability solutions to commercial, industrial, local, state, federal, and global clients. Enthalpy operates as the advanced analytical arm of Montrose, with a current network of 9 NELAP-accredited laboratories with 200+ chemists, environmental scientists, and technical specialists nationwide.

For a complete list of toxicological and other services offered by Enthalpy, visit www.enthalpy.com or view our latest SOQ. To learn more about the broader services offered by Montrose, please visit http://montrose-env.com/.