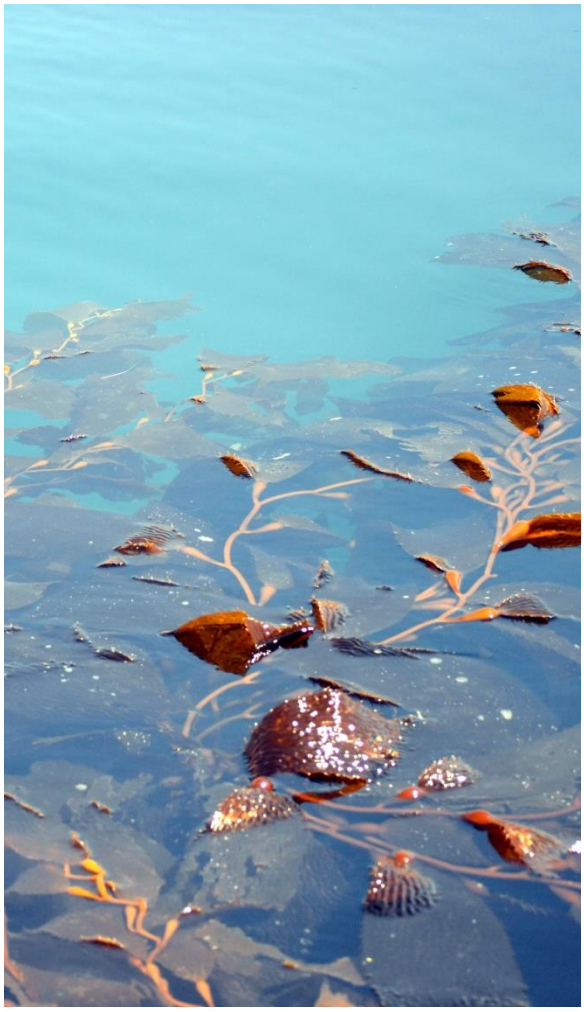

This year's conference includes a special session of invited talks to dive deeper into current perspectives and thinking about issues relating to copper in the coastal marine environment.

Discussion Summary

Current issues associated with the assessment, use, and effects of copper in the coastal marine environment

This course is designed to provide a basic introduction to copper issues in the marine environment. Understanding sources, uses, exposure routes, and receptors is key to accurately assess the effects of copper on organisms, identify the factors that mitigate toxicity, and to develop management strategies to reduce impacts.

The presentations will describe various uses of copper in the marine environment and the basic principles and tools currently used to estimate environmental health risks.

Please join us in valuable discussions led by a very special set of invited speakers. Our speakers include regional experts in chemical fate, analytical methods, and risk assessments. Our speakers also provide a range of regulatory perspectives from national guidance to the protection of local species of concern.

Conference Agenda

Thursday, April 24

8:30 am	Water Quality Challenges David Gibson, San Diego Regional Water Quality Control Board
9:00 am	Methodological Challenges for Low Detection Level Measurements of Metals in Seawater Rich Gossett, Physis Laboratories, Inc.
9:30 am	Life Cycle Contributions of Copper from Vessel Painting and Maintenance Activities Patrick Earley, SPAWAR Systems Center
10:00 am	Copper Bioavailability and Toxicity to *Mytilus galloprovincialis* in Shelter Island Yacht Basin, San Diego Ignacio Rivera-Duarte, SPAWAR Systems Center
10:30–11:00 am	*Break*
11:00 am	USEPA's Perspective for Copper Water Quality Controls in Marine Environment Dr. Cindy Lin, U.S. Environmental Protection Agency, Region IX
11:30 am	Setting Site Specific Cleanup Objectives for Copper in San Diego Bay – A Regulatory Perspective Dr. Helen Yu, San Diego Regional Water Quality Control Board
12:00 pm	Control of copper in antifouling paint by Department of Pesticide Regulation Nan Singhasemanon, California Department of Pesticide Regulations
12:30–1:30 pm	*Lunch*
1:30 pm	Higher trophic level risks from copper Dr. Catherine Zeeman, U.S. Fish and Wildlife Services
2:00 pm	Implementing TMDLs for Copper Discharged from Pesticidal Boat-Hull Paints: Taking an Integrated Approach Leigh T. Johnson, UC Cooperative Extension, and Dr. Carolynn Culver, UC Sea Grant Extension

2:30 pm	Clean Marinas, Clean Water: The Port's Approach to Reducing Copper Pollution and Meeting Water Quality Regulations Karen Holman, Port of San Diego
3:00–3:30 pm	*Break*
3:30 pm	Marine Antifouling Coatings: Risks, Benefits, Regulations, and Trends Neal Blossom, American Chemet Corporation
4:00 pm	Lessons Learned: The importance of TMDL Alliances in Achieving Non-Point Source Mitigation John Adriany, ChemMetrics and in affiliation with San Diego Port Tenants Association, Recreational Boaters of California, Clean Marinas, and Shelter Island Master Lease Holder Group
4:30 pm	Plenary: 30 to 60 minutes depending on interest and content, followed immediately by poster social.

Poster Social 5:00–7:00 pm

Heavy appetizers, beer, wine, sodas provided

A Disturbance in the Force: Copper Impairs Herbivore Response Towards Seaweed Inducible Defenses.

Warneke, A.M.* and J.D. Long, San Diego State University

Impacts of Hypersaline Acclimation on the Sublethal Toxicity of Chlorpyrifos to Salmonid Olfaction.

Maryoung, L.A.*,[1] R. Lavado,[1] G. Hardiman,[2] R. Sasik,[2] N. Agarwal,[2] K. Tierney,[3] and D. Schlenk[1]

[1] Department of Environmental Sciences, University of California | [2] Department of Medicine, University of California, San Diego | [3] Department of Biological Sciences, University of Alberta

Combined Effects of Sub-lethal Insecticide Exposure and Water Flow Speed on Predator-Prey Interactions between the California Killifish (*Fundulus parvipinnis*) and a spionid polychaete (*Polydora cornuta*)

Hayman, N.T.*, B.T. Hentschel, T.W. Anderson, V.C. Renick, J.L. Savoie, S.M. Allwang, and G.M. Tice, San Diego State University

The Significance of Water Boundary Layers in Calibrating Passive Samplers for Measuring Hydrophobic Organic Contaminants in Aquatic Environments

Griffin, L.*, A. Joyce, B. Currey, Y. Cu, and R. Adams, Loyola Marymount University

Comparison of Standard Elutriate Test (SET) and Effluent Elutriate Test (EET or MET)

Clark, R.R. and D. Gonsman, Calscience Environmental Laboratories, Inc.

Bold text indicates presenting author, *indicates a student presentation

Conference Agenda

Friday, April 25

8:30 am	Copper in Harbor Island East and West Inlets: Key to Understanding Detoxification Processes **Alberto Zirino**, C. Neira, G. Mendoza, and L. A. Levin, Scripps Institution of Oceanography
8:50 am	Preliminary Ecotoxicity Assessment of New Generation Alternative Fuels in Seawater Gunther Rosen, **Renee Dolecal**, Marienne Colvin, and Robert George. SPAWAR Systems Center Pacific
9:10 am	A Multi-Year Temporal and Spatial Evaluation of Pyrethroid Concentrations and Biological Effects in the Lower American River **Stephen Clark**, A. Gantner. R.S. Ogle, Pacific EcoRisk; C. Harbourt and G. Hancock, Waterborne Environmental; T. Albertson, Caltest Analytical; J. Giddings, Compliance Services International; G. Mitchell, FMC Agricultural Products; A. Barefoot and D.M. Tessier, DuPont Crop Protection; M. Dobbs, Bayer CropScience, Research Triangle Park; and K. Henry, Syngenta Crop Protection, LLC
9:30 am	Evaluation of Pyrethroid Pesticide Detection and Toxicity in Tertiary Effluent **Joshua Westfall**, Sean Turpin, and Carlita Barton, Sanitation Districts of Los Angeles County
9:50 am	Impacts of Hypersaline Acclimation on the Acute Toxicity of Chlorpyrifos to Salmonids **Lindley Maryoung***, R. Lavado, and D. Schlenk, Department of Environmental Sciences, University of California
10:10–10:40 am	*Break*
10:40 am	Spatial Analysis of Chromophoric Dissolved Organic Matter Optical Properties in Southern California Salt Marsh Porewaters **Jennifer Bowen***, Catherine Clark, Warren De Bruyn, Kelly Royere, and Jason Keller, Chapman University
11:00 am	Bioavailability and Spatial Distribution of Heavy Metals in Carpinteria Salt Marsh Reserve Sediments **Farnaz Farhang***, G. Cardenas, and D.D. Deheyn, Scripps Institution of Oceanography, University of California, and Kevin Lafferty, Department of Ecology, Evolution, and Marine Biology and Marine Science Institute, University of California
11:20 am	Effects of Estrogenic Compounds on Cardiac Development in Zebrafish **Graciel Diamante*** and Daniel Schlenk, University of California

11:40 am	Cytochrome P450 Role in Biotransformation of Hard Coral (*Porities lobata*) Compound Homarine in Coral-Consuming Butterflyfish **Aileen Maldonado***and D. Schlenk, University of California; D. Gochfeld, M. Slattery, S. Ankisetty, University of Mississippi; G. Ostrander, Florida State University,
12:00–1:00 pm	*Lunch*
1:00 pm	A Framework for Evaluating Potential Effects of Trace Organics on Aquatic Life **John Wolfe**, Carrie Turner, Doug Bradley, LimnoTech; Allen Burton, University of Michigan; Drew McAvoy, University of Cincinnati
1:20 pm	Case Study: Determining White Croaker (*Genyonemus lineatus*) Movements and Habitat Selection in the Los Angeles and Long Beach Harbor and the Application of Predictive Habitat Use Models **Bonnie Ahr***, M.R. Farris, and C.G. Lowe, California State University Long Beach, Department of Biological Sciences
1:40 pm	Ports of Long Beach and Los Angeles Fish Tissue Total Maximum Daily Load – Site-Specific Bioaccumulation Model **Wendy Hovel**, David Glaser, Ying Poon, Shelly Anghera, Anchor QEA; Andrew Jirik and Kathryn Curtis, Port of Los Angeles; Matthew Arms and James Vernon, Port of Long Beach
2:00 pm	Ecological Risk Assessment of Bioaccumulative Compounds in the San Diego Region Harbors and Newport Bay – Objectives and Project Update for Bight '13 and the San Diego Bay Study Partnership **Chris Stransky**, AMEC Environment & Infrastructure, Steve Bay and Ken Schiff, Southern California Coastal Water Research Project, Ruth Kolb, City of San Diego, Phil Gibbons, Port of San Diego, Katie Zeeman, USFWS, and Julie Chan and Melissa Valdovinos, San Diego RWQCB
2:20 pm	The anti-diabetic drug metformin causes age-dependent estrogenic effects in fathead minnows **Cindy Bui***, Jordan Crago, Daniel Schlenk, Department of Environmental Sciences, University of California-Riverside
2:40 pm	Performing Under Pressure: An Assessment of In Situ Sediment Remediation Success At A Deep Water Site; Puget Sound Naval Shipyard **Kelly Tait** and Chris Stransky, AMEC Environment & Infrastructure, Gunther Rosen and Molly Colvin. SPAWAR
3:00–3:20 pm	*Break*
3:20 pm	Student Awards, Raffle, Closing Remarks

Bold text indicates presenting author, *indicates a student presentation