

Monday, April 20
8:30 a.m.–10:00 a.m.

**Session I:
Welcome Speakers**



EPA Welcome

Ephraim S. King

Director, Office of Science and Technology, Office of Water, USEPA

Biosketch

Ephraim King has been Director of the Office of Science and Technology (OST) since May 2005. OST's areas of responsibilities include development of human health and aquatic life criteria under the Clean Water Act, oversight of the national water quality standards program, development of industrial effluent guidelines, and implementation of the Beach Act including administration of the national beach notification and fish advisories program and development of new or revised recreational water quality criteria under section 304(a) of the Clean Water Act. In addition, OST is responsible for providing scientific and technical support for the development of human health Maximum Contaminant Level Goals under the Safe Drinking Water Act.

Prior to the Office of Science and Technology, Mr. King was a Division Director and Branch Chief in the Office of Ground Water and Drinking Water for nine years with responsibility for development of national microbial human health standards to protect against protozoa, bacterial and viral pathogens in drinking

water supplies. He also had lead responsibility for developing public health drinking water standards for arsenic and disinfection byproducts as well as for reviewing and updating existing drinking water standards and identifying new contaminants of concern.

From 1987 to 1996, Mr. King was Chief of the National Pollutant Discharge Elimination System (NPDES) State Programs Branch with responsibility for oversight and review of NPDES State programs, development of the national Stormwater Program, and management of the national pretreatment program. From 1979 to 1986, Mr. King worked in the Administrator's office, reviewing legislation and drafting testimony, and then in the General Counsel's office with responsibility for a range of Clean Water, RCRA and Superfund issues.

Mr. King received a B.A. degree from Harvard University and a J.D. from the University of Maine School of Law.



State Welcome

Alexis Strauss

Water Management Division, Director for USEPA Region 9

Biosketch

Alexis Strauss joined the EPA 30 years ago as a Presidential Management Intern, working her way through the hazardous waste (RCRA) and Superfund programs before finding the ultimate challenge in the Clean Water Act and Safe Drinking Water Act program implementation. She notes that every week brings something new and worthwhile into the mix of EPA responsibilities, which when undertaken with a superb team of managers and staff, makes her

job as Water Director for the Pacific Southwest perhaps the best job in all of EPA. Alexis was raised in South Africa and So. California, and is compelled to remain near the Western edge of continents in a Mediterranean climate, preferably with a constant sea view. She received her undergraduate and graduate education at UCLA. She is the recent and fortunate recipient of a Presidential Rank Award.



“Riding the Wave...”

Laird Hamilton

Professional Surfer and Clean Water Advocate

Biosketch

Laird Hamilton is known as the guiding genius of crossover board sports, and he is truly amazing in the water. ‘Laird is the elder son of 60’s surfing legend, Bill Hamilton, and is a throw back to that time when surfers prided themselves on being an all-around waterman.’ His mother, Joann, gave birth to him in a “bathysphere” with reduced gravity as part of an experiment at the UC Medical Center in San Francisco. Joann was also a surfer and decided to move the family from California to Hawaii when Laird was just a few months old. They lived on Oahu’s North Shore and later in a remote valley on Kauai, not far from one of the world’s best surf breaks. He learned to surf between the ages of two and three on the front half of a surfboard, and at age eight, his father took him to the 60-foot cliff at Waimea Falls where Laird looked down, looked back at his dad, and jumped. ‘He’s been bold since day one,’ says Bill, ‘and hell-bent on living life to the extreme.’

Laird heads up a technical signature pro-model line with longtime sponsor, Oxbow, a French-based company that has been sponsoring Laird since the early 90’s. The Oxbow brand launched in the United States in summer 2008. Oxbow, an authentic rider/action sports brand, boasts a rich 25-year history with internationally recognized athletes.

Laird also joined H2O Audio’s Board of Directors in 2008. Laird will be strategically guiding the company with marketing its brand and developing its next generation of surf/music products. Laird is working on two books with best selling author Susan Casey. “The Wave” is due out in 2010 by Broadway Publishing Group. It’s about the science of giant waves, 100 ft. or higher, and the surfers who try to ride them, an undertaking that often requires helicopters, wave runners and precise timing. “Force of Nature: Mind, Body, Soul, and, Of Course, Surfing” is a fitness guide by Laird and published by Rodale Books and hit retailers on October 28, 2008.

Laird is famous for doing all kinds of extreme things in the ocean from making epic long distance journeys on his ocean-going paddleboard to creating the fast forward speed sailing loop. *Surfer Magazine’s* editor, Sam George, in the magazine’s ‘Most Powerful People in Ssurfing’ issue said, “Laird is flat out surfing’s biggest, boldest, bravest. He is the best big wave surfer in the world today, bar none. He is the sport’s most complete surfer, displaying almost unnerving expertise in a multitude of disciplines: tow-surfing, bodysurfing, longboarding, paddling, sailboarding, kite-surfing.”



“...of Emerging Science”

Steve Weisberg

California Coastal Water Research Project (SCCWRP)


Biosketch

Dr. Stephen Weisberg is Executive Director of the Southern California Coastal Water Research Project (SCCWRP), a research agency that serves as the interface between science and water quality management in California. Dr. Weisberg's research emphasis is in design of environmental monitoring programs and developing next generation assessment tools. He is Chair of the Southern California Bight Regional Monitoring Steering Committee and is on the Governing Boards of the California Ocean Science Trust and the Southern California Coastal Ocean Observing System. He serves

on numerous advisory committees, including the State of California's Clean Beach Task Force, the California Ocean Protection Council Science Advisory Team, California's Water Quality Monitoring Council, the Alliance for Coastal Technologies Stakeholder Committee and the US EPA Board of Scientific Counselors. Dr. Weisberg received his undergraduate degree from the University of Michigan and his Ph.D. from the University of Delaware.



Riding the wave



of emerging science

Stephen B. Weisberg
Southern California Coastal Water
Research Project Authority
www.sccwrp.org


VERY EXCITING TIME

- For years we have been talking about the future of molecular technology
 - Faster
 - Better
 - Cheaper
- That future is now
 - New technologies are already being used on a pilot basis
- EPA has entered into a legal settlement agreement to roll out new criteria/methods nationally by 2012
 - You likely won't be monitoring beaches the same way you do now by the time we have the next Beaches Conference

WHAT KIND OF CHANGES CAN WE EXPECT?


- Faster methods for measuring existing indicators
- New indicators
 - New standards?
- Predictive models
 - Already being used in some areas
 - Will continue to improve with rollout of ocean observing technologies

FASTER METHODS




Beachgoers feel protected

The Problem




Results in 24-96 hours



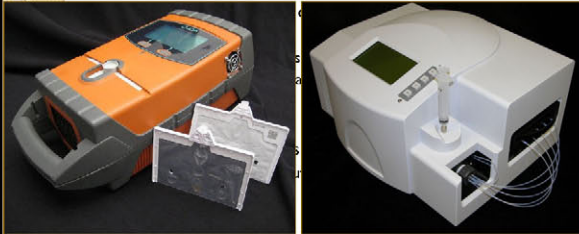
Reality

The Solution



Results in several hours

RAPID METHODS



- Continuous, telemetered measurements
 - Five years out

RAPID METHODS

- Quantitative polymerase chain reaction (qPCR) is in late stage testing
 - California will likely begin using it for health warnings starting next April
 - RNA-based and immunoassay-based technologies are only a year behind
- Field deployable methods
 - Pour the water, push the button
 - Operable by lifeguards
- Continuous, telemetered measurements
 - Five years out



RAPID METHODS

Monterey Bay Aquarium Research Institute – Environmental Sample Processor

NEW INDICATORS

- Many new options once you have molecular technology
 - No longer restricted to easily cultured species
 - Can measure obligate anaerobes, reducing concern about environmental re-growth
- 31 candidate indicators are presently being tested in epidemiology studies
- Source identification techniques continue to improve
 - Experts at EPA workshop suggested the possibility of source-specific standards
 - EPA is currently investigating microbial risk assessment as to support possible source-specific standards

PREDICTIVE MODELS

- Bathers will be able to check this afternoon's conditions before leaving for the beach in the morning
- Models are already being used in some locations
 - CA posts warnings for any rainfall greater than 0.1 inch
 - Warnings are issued for several Great Lakes sites based on physical conditions
- Predictions will continue to improve with implementation of real-time ocean observing systems

Modeling Near-Shore transport in Huntington Beach

Measurements:

- Alongshore Currents
- Altimeter
- Chlorophyll
- Conductivity
- Current Profiler
- Depth
- Nutrients
- Optical Backscatter
- Salinity
- Surface Currents
- Temperature
- Wave Height
- Wave Period
- Wave Direction

Model Alongshore Currents

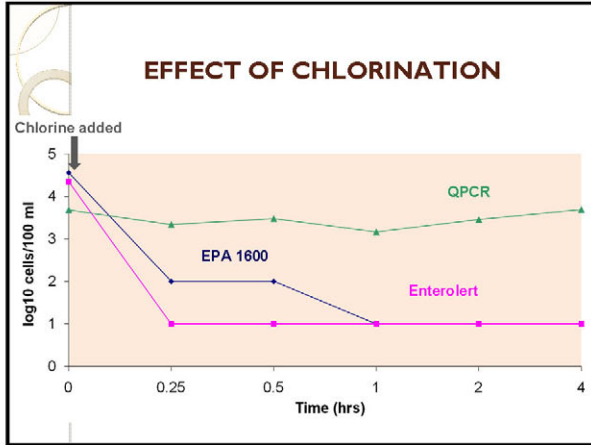
SCCOOS www.sccoos.org

MANY CHALLENGES

- Technical
- Interpretational
- Technology transfer

TECHNICAL CHALLENGES

- Most molecular methods don't differentiate live and dead
 - Particularly problematic in presence of chlorinated effluent
 - We don't know much about degradation rates of cellular structures in the ambient environment
- Molecular methods are subject to chemical interference (inhibition)
 - Inhibition would cause underestimation of health risk
 - How often does this happen?
 - Are our internal controls sufficient to identify those circumstances?
- How good is good enough to change methods?
 - Do the new methods provide a superior health risk relationship than traditional methods?
 - Has that been established at enough different types of beach?



- ### INTERPRETATIONAL CHALLENGES
- We are likely to have new standards
 - How will we set the acceptable risk level?
 - Presently differs between fresh and marine waters
 - How will we assess trends when methods have changed?
 - What to do with TMDLs and effluent limits linked to old methods?
 - Will there be added cost to maintain a dual system?
 - Social acceptance: How will the public react to "changing condition" of their beach?
 - We may be giving them better information, but will they accept it as such?

- ### TECHNOLOGY TRANSFER CHALLENGES
- Who will train labs with little prior molecular experience?
 - There are a lot of you out there
 - What about NGOs that have become IDEXX-enabled?
 - Most sState laboratory certification programs are ill-suited for molecular methods
 - May be able to adopt certification model used for clinical laboratories
 - Per unit cost for new methods may be less, but will small labs be able to amortize the start-up costs?
 - Capital costs for equipment
 - Training and certification costs
 - Will we end up with a dual system?
 - Commercialization
 - Who are you going to buy your supplies from?

- ### YOUR CHALLENGE AT THIS MEETING
- This meeting is the interface between science and managers
 - Attendees are an almost even split among scientists, stakeholders and beach managers
 - Use this unique opportunity for dialogue
 - Managers need to understand the opportunities in front of them
 - Scientists need to understand managers' hesitations (and incentives) toward adoption
 - This is your chance to improve the process
 - Monitoring systems WILL change over the next three years
 - Success of this meeting should be judged on whether it contributes to a smooth transition