

**FINAL PROGRAM**

**Impacts of  
Wildfires on Air Quality and Health**

**February 13-14, 2019 • Santa Rosa, CA**



**AIR & WASTE MANAGEMENT  
ASSOCIATION**

# FINAL PROGRAM

## ABOUT THE CONFERENCE

This conference will take an encompassing look at the air quality and public health impacts from wildfires by bringing together experts in multiple disciplines to share information and proposed solutions to mitigate smoke effects. This is a unique opportunity for those dealing with wildfire effects to learn from experts and professionals with recent experience. The conference will benefit land managers, state and local air pollution control agency professionals, public health officials, health care providers, and consultants.

A key goal of this meeting is to inform attendees of the latest tools, concepts and approaches to better understand and protect public health. Presenters will provide the latest research and solutions on the latest critical topics, including: Understanding Fire Behavior and Forecasting Smoke Impacts; Monitoring and Measuring Smoke Impacts; Prediction, Prevention, Assessment and Control of Health Impacts, and Collaboration and Communication.

## GENERAL INFORMATION

### REGISTRATION

Register online at [www.awma.org/wildfires](http://www.awma.org/wildfires) by February 11. Registration will be located in the Dry Creek Valley Foyer and be open during the following hours:

Wednesday, February 13	8:00 am - 4:00 pm
Thursday, February 14	8:00 am - 3:00 pm

Your registration will not be processed without payment.

### REFUND POLICY

If written notice of cancellation is received on or before January 30, 2019 payment will be refunded, less a \$75 cancellation fee. (Cancellation fees apply regardless of payment method). Substitutions may be made at any time; payment for any difference is due at the time of substitution. This refund policy applies to all occurrences, including weather-related events and other natural disasters. In the unlikely occurrence of event cancellation, the Association is not liable for any expenses incurred by the registrant other than the full refund of registration fee(s) paid.

### CONTINUING EDUCATION CREDITS

Conference and course attendees may be eligible for continuing education credits. For more information, please contact Gloria Henning at [glhenning@awma.org](mailto:glhenning@awma.org) or +1-412-904-6021.

### PRESENTERS' MEETING

Presenters and Session Chairs will meet on the day of their session involvement to review program details. Presenters should bring their presentations on a memory stick/USB to this meeting as well as a brief bio.

### CONFERENCE PROCEEDINGS

Online conference proceedings including final PowerPoint presentations will be available after the conference via email link. Final PowerPoint presentations will be collected on site, converted to PDF files, and then posted online after the conference.

PRESENTERS - If you do NOT want your presentation to be included in the conference proceedings, please let us know.

### CONFERENCE COMMITTEE

Scott Freeburn, Conference Chair

Conference Planning Committee:

- Susan Aitkens, CA Department of Public Health
- Robert Bernstein, MD, Tuolumne County Health Officer
- Brian Bunger, Bay Area Air Quality Management District
- Sara Head, Yorke Engineering
- Ann Hobbs, Placer County AQMD
- Michael Kleinman, PhD, UC Irvine, School of Medicine
- John Koehler, Yorke Engineering
- Charles Pearson, CA Air Resources Board
- Trent Procter, US Forest Service, Sequoia National Forest
- Eric Sergienko, MD, Mariposa County Health Officer
- Eric Stevenson, Bay Area Air Quality Management District

### LOCATION

**Hyatt Regency Sonoma Wine Country**

170 Railroad Street  
Santa Rosa, CA 95401  
1-877-803-7534

# FINAL PROGRAM

## THANK YOU TO OUR SPONSORS

### Platinum Sponsor



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

The Air District is tasked with regulating stationary sources of air pollution in the nine counties that surround the San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties. The Air District aims to create a healthy breathing environment for every Bay Area resident while protecting and improving public health, air quality, and the global climate. [www.baaqmd.gov](http://www.baaqmd.gov)

### Gold Sponsor



Enthalpy Analytical is a NELAP accredited air laboratory that provides solutions for the most complex air measurement programs. Best known for supporting emission test programs, we also offer ambient, fence-line, cooling tower, process, and flare sample analysis. Key analytical methods include: EPA Methods 18, 325A/B, and TO-14/15. [www.enthalpy.com](http://www.enthalpy.com)

### Silver Sponsors



Ambilabs is a full services provider and integrator of air, environmental, and process monitoring solutions. We distribute, install, and train on a broad range of gas and particulate monitoring instrumentation. Our experienced staff provide expertise, engineering, software, instrumentation, systems and solutions for obtaining valid, accurate, and precise air quality data. [www.ambilabs.com](http://www.ambilabs.com)



Ramboll is a leading engineering, design and consultancy company. Our globally recognized Environment & Health practice has earned a reputation for technical and scientific excellence, innovation and client service. We strive to achieve inspiring and exacting solutions that make a genuine difference to our clients, end-users and society at large. [www.ramboll.com](http://www.ramboll.com)

# FINAL PROGRAM

## TABLETOP DISPLAYS

### **AethLabs**

[www.aethlabs.com](http://www.aethlabs.com)

Table 7

AethLabs, located in San Francisco, California, designs and manufactures small, mobile Black Carbon monitors. AethLabs is focused on the development of high quality personal exposure and Black Carbon monitoring instruments. The microAeth® family of Black Carbon monitors consists of three new continuous, unattended, full spectrum, multi-week to multi-month instruments which complement the microAeth® AE51 personal exposure monitor. The new microAeth® MA series boasts many advanced features integrated into compact, lightweight form factors.

### **AIR X-TEX, a Division of The Xextex Corporation USA**

[www.xextx.com](http://www.xextx.com)

Table 3

The New HVAC Air Filter That Pays For Itself and More! Air X-Tex™, is a Patented HVAC, High Capacity, Heavy Duty, Mechanical Merv 8 Air Filter. Air X-Tex is the first air filter to utilize as its principal component, a filter media made from recycled/upcycled PET plastic bottles and packaging.

### **Ambilabs**

[www.ambilabs.com](http://www.ambilabs.com)

Table 9

Ambilabs is a full services provider and integrator of air, environmental, and process monitoring solutions. We distribute, install, and train on a broad range of gas and particulate monitoring instrumentation. Our experienced staff provide expertise, engineering, software, instrumentation, systems and solutions for obtaining valid, accurate, and precise air quality data.

### **CleanAir Instrument Rental**

[www.rental.cleanair.com](http://www.rental.cleanair.com)

Table 2

CleanAir is the world's leading rental provider of air, gas and chemical sampling and testing equipment. We've spent almost 50 years mastering our craft, and when it comes to ambient air or source testing and monitoring, we've got a solution for you.

### **EMSL Analytical, Inc.**

[www.latesting.com](http://www.latesting.com)

Table 4

EMSL Analytical operates 46 laboratories throughout the U.S. and Canada specializing in fast laboratory results of industrial hygiene, microbiology, asbestos, lead, and much more, including a full line of sampling products, supplies and equipment.

### **Enthalpy Analytical**

[www.enthalpy.com](http://www.enthalpy.com)

Table 8

Enthalpy Analytical is a NELAP accredited air laboratory that provides solutions for the most complex air measurement programs. Best known for supporting emission test programs, we also offer ambient, fence-line, cooling tower, process, and flare sample analysis. Key analytical methods include: EPA Methods 18, 325A/B, and TO-14/15.

### **Fiberlock Technologies by ICP**

[www.fiberlock.com](http://www.fiberlock.com)

Table 6

Fiberlock Technologies manufactured by ICP Building Solutions Group is the leading manufacturer of products used to address environmental, safety, and health hazards. As an industry leader, we offer a full set of solutions to address the many needs in the asbestos and lead paint abatement and water, fire and odor control remediation industry.

Kontrol Kubes are the leading solutions for mobile containment in healthcare industries for containing areas for dust control for construction projects within hospitals.

### **Sonoma Technology**

[www.sonomatech.com](http://www.sonomatech.com)

Table 5

Sonoma Technology, Inc. (STI) is an employee-owned firm that delivers innovative, science- and technology-based solutions for our clients' environmental needs worldwide. Our services include air quality research, atmospheric measurements, air quality and smoke forecasting, atmospheric modeling and analysis, instrumentation and data system development, software development, decision support systems, and outreach.

### **T & B Systems**

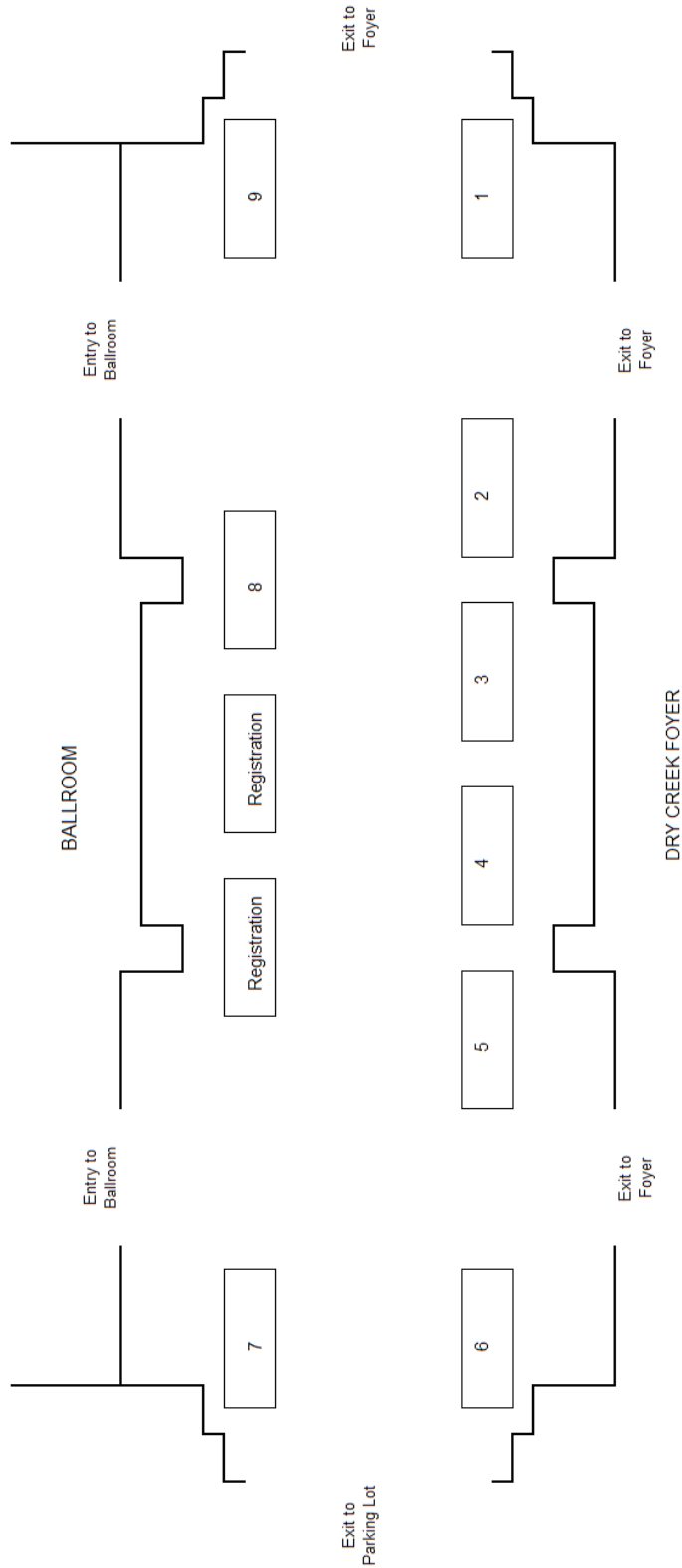
[www.tbsys.com](http://www.tbsys.com)

Table 1

T&B Systems is a California small business that provides consulting and system integration services for environmental and meteorological monitoring applications. We have developed innovative PM and meteorological monitoring strategies for mobile and fixed platforms that provide real-time secure web based data display and graphs to support monitoring and decision needs.

# TABLETOP DISPLAY FLOOR PLAN

## Hyatt Regency Sonoma Dry Creek Valley Foyer



# TECHNICAL PROGRAM - Wednesday, February 13

**8:00 am - 4:00 pm**  
Conference Registration  
Dry Creek Valley Foyer

**8:00 am - 8:45 am**  
Presenters' Meeting  
Dry Creek Valley Ballroom

**8:00 am - 8:45 am**  
Continental Breakfast  
Dry Creek Valley Foyer

**8:45 am - 9:00 am**  
**Welcome and Introductory Remarks**  
Chris Rogers, Vice Mayor of the city of Santa Rosa

(ALL SESSIONS WILL BE IN THE DRY CREEK VALLEY BALLROOM)

**9:00 am - 9:30 am**  
**Keynote Presentation**  
**Responding to Our Wildfire Smoke Public Health Crisis: Lessons Learned on Protecting Our Future**  
Jack Broadbent, Executive Officer, Bay Area Air Quality Management District

**SESSION I: HEALTH IMPACTS OF SMOKE EXPOSURE**  
**Chair:** Eric Sergienko, MD, CHO, Mariposa County

**9:30 am - 10:00 am**  
**Overview of Smoke Health Effects**  
John Balmes, MD, Professor, University of California Berkeley School of Public Health

**10:00 am - 10:30 am**  
**Effects of Exposure**  
Michael Kleinman, Professor, University of California, Irvine

**10:30 am - 11:00 am**  
**Health Effects of Wildfire Smoke Exposure: Two Epidemiological Studies from California**  
Sumi Hoshiko, MPH, Research Scientist, Environmental Health Investigations Branch, California Department of Public Health

**11:00 am - 12:00 pm**  
**Public Health Effects Exposure Panel: What We Have Seen**

**Speakers include:**

- Dr. Olivia Kasirye, Public Health Officer, Sacramento County
- John Balmes, MD, Professor, University of California Berkeley School of Public Health
- Michael Kleinman, Professor, University of California, Irvine
- Sumi Hoshiko, MPH, Research Scientist, Environmental Health Investigations Branch, California Department of Public Health

**12:00 pm - 1:00 pm**  
**Lunch**  
Russian River Valley Ballroom

**SESSION II: WILDFIRE SMOKE MONITORING SYSTEMS AND METHODS**

Chair: Eric Stevenson, Director of Meteorology and Measurement, Bay Area Air Quality Management District (BAAQMD)

**1:00 pm - 1:30 pm**  
**Fixed Monitoring Systems and Routine Monitoring of Air Quality**  
Eric Stevenson, Director of Meteorology and Measurement, BAAQMD

**1:30 pm - 2:00 pm**  
**Mobile Monitoring Systems**  
Charles Pearson, Manager, Incident Air Monitoring Section, California Air Resources Board

**2:00 pm - 2:30 pm**  
**Distributed Monitoring Instruments and Systems**  
Timothy Dye, Principal, TD Environmental Services

**2:30 pm - 3:00 pm**  
**Networking Break and Display Viewing**

**3:00 pm - 3:30 pm**  
**Comparing Monitoring Results of PurpleAir Units with Regulatory Systems During California Smoke Events**  
Julia Luongo, Managing Consultant, Ramboll

**3:30 pm - 5:00 pm**  
**Measured Levels and Their Use Panel**

Speakers include:

- Scott Epstein, Ph.D., Program Supervisor, Air Quality Assessment, South Coast Air Quality Management District
- Eric Stevenson, Director of Meteorology and Measurement, BAAQMD
- Charles Pearson, Manager, Incident Air Monitoring Section, California Air Resources Board
- Timothy Dye, Principal, TD Environmental Services
- Julia Luongo, Managing Consultant, Ramboll

**5:00 pm - 6:00 pm**  
Networking Reception  
Dry Creek Valley Foyer

# TECHNICAL PROGRAM - Thursday, February 14

**8:00 am - 3:00 pm**

Conference Registration  
Dry Creek Valley Foyer

**8:00 am - 8:30 am**

Presenters' Meeting  
Dry Creek Valley Ballroom

**8:00 am - 8:30 am**

Continental Breakfast  
Dry Creek Valley Foyer

**8:30 am - 8:45 am**

## **A&WMA Welcome**

Michele Gehring, President, Air & Waste Management Association

(ALL SESSIONS WILL BE IN THE DRY CREEK VALLEY BALLROOM)

**8:45 am - 9:00 am**

**Sonoma County: Wildfires and the Long Recovery**  
Shirlee Zane, Sonoma County Board of Supervisors

## **SESSION III: FORECASTING SMOKE IMPACTS**

Chair: Trent Procter, Sequoia National Forest, Air Program Coordinator

**9:00 am - 9:30 am**

**Baseline Fire Weather Services: Development, Dissemination and Purpose**

Brent Wachter, Fire Meteorologist, North Operations Predictive Services, US Forest Service (USFS)

**9:30 am - 10:00 am**

**Constructing Smoke Forecasts**

Susan O'Neill, Research Air Quality Engineer, USFS

**10:00 am - 10:30 am**

**Networking Break and Display Viewing**

**10:30 am - 10:50 am**

**The Role of the Incident Air Resource Advisor (ARA)**

Kathleen Stewart, Community Toxics Coordinator, US EPA Region 9

**10:50 am - 11:10 am**

**How an Air Resource Advisor (ARA) Develops a Smoke Forecast: Examples from the Camp Fire**

Lee Tarnay, Physical Ecologist, US Forest Service, Region 5 Remote Sensing Lab

## **SESSION IV: CAMP FIRE CASE STUDY**

Chair: Trent Procter, Air Program Coordinator, Sequoia National Forest

**11:10 am - 11:30 am**

**Weather Conditions During and After the Camp Fire**

Brent Wachter, Fire Meteorologist, North Operations Predictive Services, USFS

**11:30 am - 12:00 pm**

**Air Quality Impacts of the Camp Fire**

ShihMing Huang, Air Quality Scientist/Project Manager, Sonoma Technology Inc.

**12:00 pm - 1:00 pm**

**Lunch**

Russian River Valley Ballroom

## **SESSION V: COMMUNICATING AIR QUALITY AND HEALTH ADVISORIES**

Chair: Lyz Hoffman, Public Information Officer, Santa Barbara County APCD

**1:00 pm - 1:20 pm**

**Preparations for Fire Season**

Peter Brewer, Air Quality Attainment Coordinator, Oregon Department of Environmental Quality

**1:20 pm - 1:40 pm**

**Recent Fire Case Studies in Vancouver, BC**

Francis Ries, Sr. Project Engineer, Metro Vancouver

**1:40 pm - 2:00 pm**

**Mitigation Measures in Missoula County**

Sara Coefield, Air Quality Specialist, Missoula County Public Health

**2:00 pm - 2:20 pm**

**Recent Fire Case Studies in Butte County, CA**

Jason Mandly, Air Quality Planner, Butte County Air Quality

**2:20 pm - 3:00 pm**

**Communications Panel: Answering the Tough Questions**

Speakers include:

- Peter Brewer, Air Quality Attainment Coordinator, Oregon
- Francis Ries, Sr. Project Engineer, Metro Vancouver
- Sara Coefield, Air Quality Specialist, Missoula County Public Health
- Jason Mandly, Air Quality Planner, Butte County Air Quality

## **SESSION V: AIR AND HEALTH PANEL—WHAT ARE OUR NEXT STEPS?**

Chair: Susan Aitkens, President, Emerge Technologies

**3:00 pm - 4:00 pm**

**Discussion and Direction:** A panel of speakers from the conference will be selected to discuss the most important topics identified during the sessions.

**4:00 pm**

Conference Adjourns

# Thank you for attending the Impacts of Wildfires on Air Quality and Health Conference

You will be sent a survey to provide your feedback.  
Please share your opinion so we can improve our future conferences.



**AIR & WASTE MANAGEMENT**  
A S S O C I A T I O N

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## **ABOUT THE AIR & WASTE MANAGEMENT ASSOCIATION**

A&WMA is a nonprofit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for information exchange, professional development, networking opportunities, public education, and outreach to more than 5,000 environmental professionals in 65 countries. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. A&WMA Federal Tax ID #: 25-6048614  
Consider becoming a member and enjoy benefits including publications, conference and webinar discounts, local chapters and sections, networking and plenty of opportunities to get involved. **Learn more at [www.awma.org/join](http://www.awma.org/join).**

### **Americans with Disabilities Act**

The Air & Waste Management Association supports the Americans with Disabilities Act (ADA). Those attendees requiring specific equipment or services should contact Cindy Fontanesi, Conference & Events Planner, at +1-412-904-6031 or [cfontanesi@awma.org](mailto:cfontanesi@awma.org) to make those needs known in advance. We will make every reasonable effort to accommodate them.