



The Groundwater Resources Association of California Proudly Presents:

*The 16<sup>th</sup> Symposium in the Series on Groundwater Contaminants*

**“PERCHLORATE 2006:  
Progress Toward Understanding and Cleanup”**

January 26, 2006

Hyatt Regency Hotel (formerly The Westin Hotel) - Santa Clara, California

**SYMPOSIUM AGENDA**

**REGISTRATION: 7:00 to 8:00 AM**

**Welcome**

8:00 – 8:05 Thomas Mohr, GRA President

**Introduction – Local Perspective on Perchlorate**

8:05 – 8:15 Rosemary Kamei, Director, Santa Clara Valley Water District

**General Session: Health Implications and Recent Developments**

Moderators: Kevin Mayer, U.S. Environmental Protection Agency and Thomas Mohr, Santa Clara Valley Water District

8:15 – 8:40 *Emerging Science Supporting the 2005 NRC Risk Assessment*

Dr. John Gibbs, Kerr-McGee

8:40 – 9:05 *The Occurrence and Sources of Perchlorate in Massachusetts*

Rose Knox, Massachusetts Department of Environmental Protection

9:05 – 9:30 *Using Biomonitoring to Assess Human Exposure to Perchlorate*

Ben Blount, Division of Laboratory Sciences, National Center for Environmental Health Centers for Disease Control and Prevention

9:30 – 9:55 *California’s Response to Perchlorate Impact to Groundwater*

John Borkovich, State Water Board – Division of Water Quality

**9:55 – 10:10 Morning Break**



- 1:05 – 1:25      *Natural Perchlorate in Soils and Plants of the Western US*  
Greta Orris, U.S. Geological Survey
- 1:25 – 1:45      *Accumulation of Natural Perchlorate Beneath Xerophytes in Arid and Semi-Arid Regions*  
David Stonestrom, U.S. Geological Survey
- 1:45 – 2:05      *Designing a Forensic Study to Identify Perchlorate Sources and Perchlorate Background Levels in the Llagas Groundwater Subbasin, Santa Clara County*  
Thomas Mohr, Santa Clara Valley Water District

**2:05 – 2:20      Afternoon Break**

**Concurrent Session B2: Innovative and Evolving Groundwater Remediation**

Moderators: Scott Davis, ARCADIS and Keith Roberson, San Francisco Regional Water Quality Control Board

- 12:45 – 1:05      *The Hydrogen-Based Membrane Biofilm Reactor for Removing Many Oxidized Contaminants From Groundwater*  
Bruce Rittmann, Arizona State University
- 1:05 – 1:25      *Monitoring Microbial Perchlorate Bioremediation*  
John Coates, University of California, Berkeley, Department of Plant & Microbial Biology
- 1:25 – 1:45      *Lifecycle Treatment of Perchlorate Contaminated Fresh- and Waste-Water Using Surfactant Modified Clays*  
Valentine Nzengung, PLANTECO Environmental Consultants, LLC
- 1:45 – 2:05      *Column Studies on Perchlorate Reduction by Autotrophic Bacteria in the Presence of Zero-Valent Iron*  
Marc Deshusses, University of California, Riverside

**2:05 – 2:20      Afternoon Break**

**Concurrent Session A3: Plume Characterization and Case Histories**

Moderators: Mike Taraszki, MACTEC Inc. and Jon Rohrer, WorleyParsons Komex

- 2:20 – 2:40      *Characterization of the Llagas Groundwater Subbasin*  
Mike Taraszki, MACTEC Inc.
- 2:40 – 3:00      *Investigation of Perchlorate-Containing Fertilizer and Other Potential Sources of Perchlorate Detected in Water-Supply Wells: A Case Study*  
Scott Seyfried, LFR Levine Fricke

3:00 – 3:20 *Processes Influencing the Transport of Perchlorate Through the Vadose Zone*  
Nicole Sweetland, Daniel B. Stephens & Associates, Inc.

**3:20 – 3:30 Afternoon Break**

**Concurrent Session B3: Groundwater Remediation/Treatment Case Studies**

Moderators: Tony Ward, Blasland, Bouck, and Lee and Thomas Mohr, Santa Clara Valley Water District

2:20 – 2:40 *Remediating Perchlorate-Contaminated Groundwater Using Ion Exchange: An Update on Technology Evolution*  
Peter Ritchey, Calgon Carbon Corporation

2:40 – 3:00 *Perchlorate Remediation Using Weak Base Anion Resin Technology*  
Andrea Davis, Applied Research Associates, Inc.

3:00 – 3:20 *Selection of Bioreactor to Treat Groundwater with Perchlorate, Nitrate, and Hexavalent Chromium*  
Avram Frankel, ARCADIS

**3:20 – 3:30 Afternoon Break**

**General Session: Policy Roundtable: Water Replacement Orders**

Moderators: Tom Johnson, LFR Levine Fricke and Jon Rohrer, WorleyParsons Komex

3:30 – 5:00 Panelists:  
Steve Elie, Musick, Peeler and Garrett, Counsel for the West Valley Water District and Fontana Water Company  
Jorge Leon, Counsel, Santa Ana Water Board  
Lori Okun, Counsel, Central Coast Water Board  
Colin Pearce, Duane Morris; Counsel for San Martin Private Well Owners  
Randy Visser, Morgan, Lewis & Bockius, Counsel for Olin Corporation

**5:00 – 6:30 POSTER AND EXHIBITOR RECEPTION**

**Poster Presentations**

*Methods for the Environmental Detection of Perchlorate-Reducing Bacteria*  
Kelly Bender, BioInsite Inc.

*Closed Loop Bioreactor for Perchlorate Degradation in Soils*  
Mark Bittner, Locus Technologies

*Perchlorate Occurrence in the Lower Umatilla Basin, Oregon*  
Harry Craig, U.S. Environmental Protection Agency

*Depth-Discrete Aquifer Testing in Sonic-Drilled Boreholes*  
Paul Glenn, MACTEC Inc.

*Uptake of Perchlorate by Garden Crops From a Perchlorate-Impacted Soil and Risk Via Produce Consumption*  
Lynne Haroun, Environ International

*In-Situ Bioremediation of Perchlorate in Vadose Zone Source Areas*  
Valentine Nzengung, PLANTECO Environmental Consultants, LLC

*Perchlorate Accumulation in Plants*  
Richard Peekema

*Treatment of Perchlorate – Contaminated Groundwater by Bifunctional Ion Exchange Resin at Edwards Air Force Base*  
Andrew Shepard, Earth Tech

*Identification of Naturally Occurring Perchlorate in San Diego County, California*  
Emily Vavricka, DPRA, Inc.

*Assessment of Potential Perchlorate Impacts From Use of Safety Flares Along California Roadways*  
Dimitri Vlassopoulos, S.S. Papadopoulos & Associates

*Perchlorate Biodegradation in Contaminated Aquifer Sediment with Trichloroethene by Using Zero-Valent Iron*  
Kun Yang, Department of Land, Air, and Water Resources, University of California, Davis

*Use of Dissolved Organic Carbon to Minimize Plant Uptake of Perchlorate During Phytoremediation*  
Dawit Yifru, Department of Geology, University of Georgia