



GROUNDWATER RESOURCES ASSOCIATION  
OF CALIFORNIA

*The Seventh Symposium in GRA's Series on Groundwater Contaminants*

**“Perchlorate in Groundwater: Occurrence, Analysis and Treatment”**

July 31, 2003 - Sacramento, California

*Co-Sponsored by:*  
Alpha Analytical Inc.  
Dionex Corporation  
Geomatrix Consultants, Inc.  
LFR Levine-Fricke  
Malcolm Pirnie  
Pat Chem Laboratories  
Shaw E & I  
U.S. Filter

7:30 - 8:15 am      Registration and Continental Breakfast

8:15 - 8:30 am      *Welcome and Program Overview*  
Jim Carter, GRA President  
Thomas Mohr, GRA Seminar Chair

**Session 1 - Sources, Occurrence, Geochemistry, Fate and Transport, Analysis and Toxicity of Perchlorate**

Moderator: Tom Johnson, Principal Hydrogeologist, LFR Levine Fricke,  
Vice President, Groundwater Resources Association

8:30 - 8:55 am      *Status of the Public Health Goal for Perchlorate*  
Robert Howd, Ph.D., Chief, Water Toxicology Unit, Office of  
Environmental Health Hazard Assessment, Cal/EPA

**(AND)**

*Human Health Risk Assessment of Perchlorate*  
David Ting, Ph.D., Staff Toxicologist, Office of Environmental  
Health Hazard Assessment, Cal/EPA

8:55 - 9:20 am      *Large Scale Non-Industrial Occurrence of Perchlorate in the Texas  
Panhandle and Implications for Perchlorate Uptake by Crops*  
Andrew Jackson, Ph.D., Assistant Professor, Civil Engineering  
Texas Tech University, Lubbock, Texas

9:20 - 9:45 am *Regulating Perchlorate in California Water Supplies*  
David Spath, Ph.D., Chief, Division of Drinking Water and  
Environmental Management, California Department of Health  
Services

**9:45 - 10:15 am Break in Exhibit Hall**

10:15 - 10:40 am *Analysis of Perchlorate at sub-PPB Levels Using Modifications of  
Method 314 and Other Approaches*  
Andrew Eaton, Ph.D., Director, MWH Laboratories\*  
Ali Haghani, Chemistry Services Manager, MWH Laboratories  
Douglas Later, Ph.D., Marketing Manager, Dionex Corporation  
Chris Pohl, Vice President, R&D, Dionex Corporation  
Kannan Srinivasan, Ph.D., R&D Manager, Dionex Corporation

**Session 2 - Treatment and Remediation**

Moderators: Gary Rogers, Vice President, Malcolm Pirnie Inc., Phoenix,  
AZ

Jim Strandberg, Vice President, Malcolm Pirnie Inc.,  
Emeryville CA, Director, Groundwater Resources  
Association of California

10:40 - 11:05 am *The Use of Hollow Fiber Membranes for Perchlorate Ex-Situ  
Treatment*  
Bruce Rittmann, Ph.D., John Evans Professor of Civil Engineering  
and Chemical Engineering, Northwestern University

11:05 - 11:30 am *Remediating Perchlorate-Contaminated Groundwater Using Ion  
Exchange – Lessons from Successful Operating Systems*  
Peter Ritchey, Senior Project Engineer - Calgon Carbon  
Corporation, Pittsburgh, Pennsylvania

**11:30 - 1:00 Lunch – Provided by GRA**

*Technical Accomplishments in Perchlorate Remediation and Future  
Challenges – the Department of Defense Perspective*

Colonel Daniel Rogers, Chief, Environmental Law and  
Litigation, Air Force Legal Support Agency, Pentagon,  
Washington DC

1:00 - 1:30 pm *Treatment IV: Ex-Situ and In-Situ Biological Treatment of  
Perchlorate-Contaminated Groundwater*  
William J. Guarini, Paul Hatzinger, Paul Togna, Todd Webster  
and Jay Diebol, Shaw Environmental and Infrastructure

### **Session 3 - Perchlorate in California – Case Studies**

Moderator:

- 1:30 - 1:55 pm      *Case Study I - The Aerojet Case, Rancho Cordova, California*  
Alex MacDonald, Senior Water Resources Control Engineer, Central Valley Regional Water Quality Control Board
- 1:55 - 2:20 pm      *Case Study II - The Rialto/Inland Empire Case – Financing and Managing Public Water Utility Impacted by Perchlorate*  
Brad Baxter, Public Works Director  
Sheri Lasick, Sylvir Consulting
- 2:20 - 2:55 pm      *Case Study III – A Survey of In-Situ Bioremediation Applications for the Reduction of Perchlorate in Soil and Groundwater*  
Evan Cox - GeoSyntec

**2:55 - 3:15 pm      BREAK in Exhibit Hall**

### **Session 4 - Panel Discussion: Industry and Regulatory Perspectives**

Moderator: Timothy Parker, California Department of Water Resources, Past President, GRA

- 3:15 – 5:00 pm      Panel Discussion: Appropriate Regulatory, Stakeholder, and RP Responses to Impacts from Perchlorate Contamination Affecting Groundwater Resources in the Absence of Legal Standards  
Gary Carlton, Member, State Water Resources Control Board, (former CEO of McLaren-Hart)  
Steven Hoch, Esq., Hatch and Parent Law Firm  
Col. Daniel Rogers, Chief of Environmental Litigation and Legal Affairs, US Air Force  
David Spath, Chief, Division of Drinking Water and Environmental Management, California Department of Health Services  
Mark Beuhler, Associate Vice President, Metropolitan Water District of Southern California

**5:00 – 6:30 pm      Reception and Poster Session**

### **POSTERS**

#### ***Perchlorate and Other Emerging Contaminants - Challenges to Water Quality***

Maryline Laugier\*, Elisabeth Hawley, Rula Deeb, and Michael Kavanaugh, Malcolm Pirnie, Inc.

***Rethinking Traditional Approaches to Hydraulic Capture in Preparation for the Next Series of Emerging Chemicals of Concern in Groundwater***

Neil Blandford, Nicole Nelson, Daniel Davis, Daniel B. Stephens & Associates, Inc.

***Perchlorate and Nitrate Reduction by Microbial Communities in Vadose Soil***

Mamie Nozawa-Inoue, Ph.D., Jonathan Leong, Ph.D., Dennis Rolston, Ph.D., and Kate Scow, Ph.D., Department of Land, Air, and Water Resources, University of California, Davis

***Bench-Scale Evaluation of Perchlorate Biodegradation Using Municipal Wastewater***

Laurie LaPat-Polasko and Brian Scott Aiken, Geomatrix Consultants, Scottsdale, AZ

***Well-side Medical Anecdotes and Perchlorate Avoidance***

Larry L. Ladd, Medical Geographer

***In-Situ Removal Of Perchlorate From Perched Groundwater By Inducing Enhanced Anaerobic Conditions***

Lisa Marie Owsianiak, EIT, Frank Lenzo, PE, and Barry Molnaa, ARCADIS;  
Brian Kelleher, Kelleher & Associates

***Enhancement of Perchlorate Analysis using Solid Phase Extraction (SPE) Cartridges***

Victor Medina\*, Steven Larson, Barbara Extine, United States Army Corp of Engineers – Engineer Research and Development Center, Vicksburg, Mississippi

***Enhanced In Situ Bioremediation of Perchlorate in Groundwater with Hydrogen Release Compound (HRC®)***

Stephen Koenigsberg, Ph.D., Anna Willett, and Jack Peabody, Regenesys

***Communicating Drinking Water Risk to Private Well Owners***

Tracy Hemmeter, Program Administrator, Santa Clara Valley Water District  
Thomas Mohr, Solvents and Toxics Cleanup Liaison, Santa Clara Valley Water District

***Safety Flares Threaten Water Quality with Perchlorate – Santa Clara Valley Water District Laboratory Study***

Miguel Silva, Chemical Engineer, Santa Clara Valley Water District