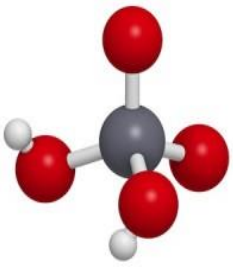
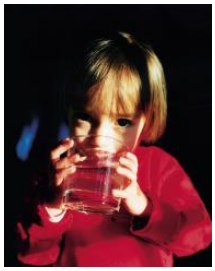
# CHROME 6 TECHNOLOGY UPDATE

**EVERYTHING WATER MANAGERS NEED TO KNOW ABOUT TREATMENT OPTIONS AND OPERATION COSTS**

# AN INFORMATION EXCHANGE WORKSHOP

**Tuesday September 27th, 2016 – Sacramento, California**
**Courtyard Marriott Sacramento Midtown Hotel**
**4422 Y Street, Sacramento, California 95817**





**This is a "must attend" program for all California water professionals involved with characterizing groundwater impacted by hexavalent chromium, for engineers designing treatment systems, regulators at local and state levels and local units of government who have authority and responsibility for drinking water health issues.**

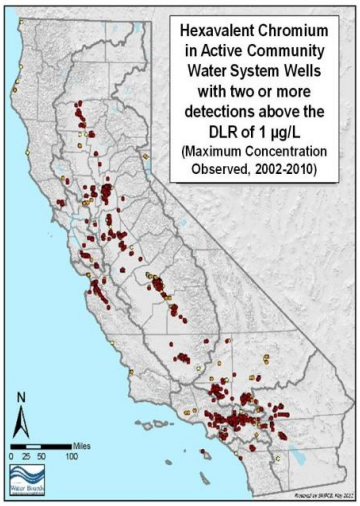
**Convened by: American Ground Water Trust**
[A (501(c)(3) education non-profit organization]
www.agwt.org
In cooperation with
**California Association of Mutual Water Companies**

**CA Water Operators**—Approved for 7.25 Contact Hours by
CA State Water Resources Control Board, Drinking Water Operator Certification Program

**Thank you to our Sponsors:** CADIZ ch2m Layne

DESCRIPTION:
An intense one-day information-exchange program about science, engineering and economic issues related to Chrome 6 and its impact on water supply in California. The program will showcase recent technology breakthroughs in the effectiveness and economics of water treatment systems to remove and reduce Chrome 6.

BACKGROUND
Chromium is an odorless and tasteless metallic element found naturally in rocks, plants, soil and volcanic dust. The most common forms of chromium that occur naturally in the environment are Trivalent chromium (Chromium 3) and Hexavalent chromium (Chrome 6). Chromium 3 is essential as an element of human diets and is found in many vegetables, fruits, meats and grains. While Chrome 6 occurs naturally in the environment, it can also be produced by industrial processes and become a contaminant in soil and groundwater.




On April 15, 2014, the California Department of Public Health released a Chrome 6 drinking water MCL (maximum contaminant limit) of 10 parts per billion (ppb). The State Water Resources Control Board's Division of Drinking Water has enforcement oversight.

Chrome 6 above 10ppb occurs in 436 California drinking water sources; above 9ppb in 514; above 5ppb in 1,025 and above 1ppb in 3,456.

[Based on data collected 2000 – 2012 and recorded in the Division of Drinking Water - water quality database.]

For many communities in the state, groundwater is the only available supply source, and where Chrome 6 is detected, there are often high costs involved in order to comply with drinking water standards or to find alternative supply sources. The availability of lower cost Chrome 6 treatment technology will help large and small communities with compliance. This workshop will review the scientific and legal background to Chrome 6 and will outline the economics and technology of Chrome 6 treatment options that are available for cities, water districts, water companies and groundwater-based communities.

7:30am – 8:00am Registration (coffee & pastries)

8:00am - 8:15am Opening Remarks – Program Objectives
NATIONAL PERSPECTIVE ON DRINKING WATER SOURCE PROTECTION FOR GROUNDWATER
*Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH*

8:15am – 8:55 US EPA Drinking Water Regulation – Establishing Maximum Contaminant Levels
EMERGING CONTAMINANT TRENDS
*Dr. Chad Seidel, Vice President, Corona Environmental Consulting, Boulder, CO*

8:55am - 9:35am US Geological Survey Chromium 6 Studies
INDUSTRIAL/ANTHROPOGENIC OR NATURALLY OCCURRING CHROME 6
*Dr. John Izbicki, USGS Research Hydrologist, San Diego, CA*

9:35am - 10:15am Coachella Valley Water District assessment of treatment cost options for Chrome 6
COACHELLA VALLEY CHROME 6 SOURCE OF SUPPLY/ TREATMENT STUDY
*Ryan Rhoades, Senior Associate, Hazen and Sawyer, Scottsdale, AZ and Steve Bigley, Director of Environmental Services, Coachella Valley Water District, Coachella, CA*

10:15am – 10;35am Break

10:35am – 10:50am Chrome 6 treatment results from a 90 day pilot trial in Southern California
MAKING A STRONG CASE FOR A WEAK BASE
*Norman Sendler, Water Treatment Specialist, Layne, Mesa, AZ*

10:50am - 11:30am Santa Ynez River Conservation District - Coping with Chrome
CAPITAL, O&M, AND LIFECYCLE CHROME 6 TREATMENT COST CALCULATIONS
*Bill Brennan, Central Coast Water Authority Executive Director (retired),Santa Barbara, CA*

11:30am - 12:10pm
CHROME 6 – THE VIEW FROM SACRAMENTO – COMPLIANCE
*Mark Bartson, Chief, Technical Operations Section, Division of Drinking Water, State Water Resources Control Board, Sacramento, CA*

12:10pm – 1:10pm Lunch (Included)

1:10pm - 1:50pm Challenges for water companies with a small base of customers
HOW CALIFORNIA'S SMALL COMMUNITIES ARE DEALING WITH DRINKING WATER COMPLIANCE
*Adán Ortega, Executive Director, California Association of Mutual Water Companies, Fullerton, CA*

1:50pm - 2:30pm How to remove Chrome 6 from the environment
METHODS USED TO TREAT CHROMIUM 6
*Dr. Chad Seidel, Vice President, Corona Environmental Consulting, Boulder, CO*

2:30pm - 2:45pm Break

2:45pm – 3:25pm Reducing treatment costs for Chrome 6 and other metals in groundwater
NEW TREATMENT TECHNOLOGY FOR COMBINED ARSENIC AND CHROME 6
*Bill Ketchum, President, ATEC Systems Associates, Seattle WA*

3:25pm – 4:05pm Cost effective technology for arsenic and Chrome 6 treatment
CHROME 6 WATER TREATMENT PILOT TESTING AT CADIZ
*Lee Odell, Water Treatment Global Technology Lead, CH2M, Portland, OR*

4:05pm - 4:30pm REVIEW AND WRAP-UP
*Terry Foreman, Groundwater Consultant, Camarillo CA*

# AMERICAN GROUND WATER TRUST

***Independent authority on groundwater***

(Non-profit, 501 (c)(3) education organization)

***Ground Water Information, Awareness & Education Since 1986***

***…… This is what we do***

~ Promote efficient and effective ground water management
~ Communicate the environmental and economic value of ground water
~ Showcase ground water science and technology solutions
~ Increase citizen, community and decision-maker awareness
~ Facilitate stakeholder participation in water resource decisions

**California Association of Mutual Water Companies** (CalMutuals) was founded in November 2013 to bring together our state's mutual water companies, facilitate the exchange of quality information, offer valuable resources, and represent members through grassroots activities and statewide lobbying.

MISSION: *California Association of Mutual Water Companies supports, educates and represents mutual water companies in the legislative process, development of policies, and allocation of resources.*

California's mutual water companies provide water service in rural areas that have no alternative supplies, and in urban pockets where property owners continue to hold mutual water company shares and liability for the integrity of the water system. Some Mutual Water Companies are owned by several cities who share responsibility for maintaining the water system that delivers water, while others serve entire neighborhoods and have invested so that they also have access to imported water operated by regional public water suppliers. Serving over 1.3 million Californians, mutual water companies are private not-for-profit organizations, providing clean, reliable, and cost-effective water solutions to hundreds-of-thousands of people, farms and small businesses.