

Antelope Valley-East Kern Water Agency Conversion to Chloramines Fact Sheet

What are chloramines?

Chloramines are disinfectants used in drinking water to remove bacteria and viruses. They are formed by mixing chlorine and ammonia in water at specific ratios.

Why is the Antelope Valley-East Kern Water Agency (AVEK) switching to chloramines?

Treatment modifications are required to meet disinfection by-products drinking water regulations. Chloramines keep disinfection by-product formation below the regulatory limits established by the Environmental Protection Agency (EPA). By converting to chloramines, AVEK will comply with more stringent EPA regulatory standards.

All water retailers that purchase water from AVEK will receive chloramines. (List on last page) Each water retailer, at their discretion may convert from chloramines to chlorine. It is not unusual for some retailers to switch between the two disinfectants during the year to optimize system performance. Consumers should always treat the water as if it has chloramines as that is the best failsafe approach.

Why use chloramines instead of chlorine?

Chloramines produce significantly less disinfection by-products than chlorine on State Project Water which will help AVEK meet drinking water regulations. Chloramines are also more persistent than chlorine, so they provide a more stable residual to reach remote areas of AVEK's distribution system.

Chloramines last longer than chlorine in water and more effectively remove pathogens including bacteria and viruses. Chloramines create fewer byproducts, such as trihalomethanes (THMs), which are suspected carcinogens that form when chlorine mixes with natural organic substances in water.

Do other California utilities use chloramines?

Yes. About two-thirds of Californians already drink chloraminated water, including customers of the Metropolitan Water District of Southern California since the mid 1980s, the San Francisco Public Utility Commission and the East Bay Municipal Utility District.

Are chloramines safe?

Chloraminated water is safe for the general public and for people with suppressed immune systems or other diseases. Like chlorine, chloramines will be safe for everyday uses like drinking, bathing and cooking for people, dogs and cats. However, as with chlorine, chloramines must be removed or neutralized for aquatic animals and kidney dialysis patients.

How will chloramines affect kidney dialysis patients?

Like chlorine, chloramines can harm kidney dialysis patients if they are not removed before water mixes with the patient's bloodstream. Dialysis centers and patients will be notified about proper procedures to remove chloramines. Equipment and facilities will be inspected and certified by the California Department of Health Services prior to the conversion.

Kidney dialysis patients can safely drink chloramines because the body naturally neutralizes them before they enter the blood stream.

How do I keep my aquatic animals safe?

Just like chlorine, chloramines can harm all saltwater and freshwater fish, shellfish, amphibians and some reptiles because they take chloramines directly into the bloodstream through their gills or skin. Prior to the conversion, pond and aquarium owners will need to purchase a new type of water conditioner or filter to remove chloramines.

All pet supply stores, aquarium shops and veterinarians will be informed of the conversion and will be prepared to advise customers on the best treatments for tanks and ponds.

Please note that although boiling water, reverse osmosis, salt additives, and letting water sit for a few days are practices sometimes used to remove chlorine, they do NOT remove chloramines.

How will chloramines affect my pool and spa water?

Although the water is completely safe, chloramines may cause changes to chlorine levels in swimming pools and spas. You will need to test your swimming pool or spa water to make sure the amount of chlorine is adjusted to appropriate levels.

Pool services and pool supply stores will be informed of the conversion and will be able to supply appropriate test kit information.

Will I notice the change to chloramines?

Possibly. Many utilities report reductions in the number of taste and odor complaints after switching to chloramines.

Are there any drawbacks to converting to chloramines?

Like with many chemical agents, there are a few drawbacks to using chloramines. As mentioned above, chloramines affect kidney dialysis patients and aquatic pets.

- ◆ Chloramines are also susceptible to nitrification, which results in bacterial growth if water is left sitting for long periods of time. AVEK has made capital improvements aimed at decreasing water stagnation that diminish the likelihood of nitrification.
- ◆ Chloramines may also decay the rubber parts of household plumbing and water heaters more quickly. As rubber wears out, consumers should replace plumbing components with chloramines-resistant materials such as high quality rubber (synthetic polymer) parts, flexible copper tubing, corrugated stainless flex, or neoprene braided stainless steel.

What is nitrification? Will the conversion cause nitrification in my drinking water?

Nitrification is the oxidation of ammonia, which allows bacterial re-growth. For nitrification to occur, water must be left standing in warm, dark conditions. AVEK has taken steps to ensure the general population will not experience nitrification. Residents and businesses with their own reservoirs may experience nitrification if water sits for extended periods of time, and these customers will need to treat water with chlorine before use. Nitrification will not occur in covered swimming pools during the winter, as conditions are too cold. Residents and businesses with emergency preparedness water drums will need to change water every three to six months and treat water with chlorine tablets before consumption.

Do businesses need to take any precautions for chloramines?

Businesses or industries that use water in their treatment process will need to remove chloramines from the water just as they currently do with chlorine. Chloramines may affect yeast growth for beer manufacturers and film development for photo labs. Chip manufacturers and pharmaceutical companies require ultra pure water for their manufacturing process, and the switch to chloramines may require companies to upgrade their current treatment system.

Who should I call for questions?

Those with questions concerning the conversion can call 661-943-3201 and ask about chloramines or visit www.avek.org

Those *affected* by the conversion

Antelope Valley Country Club
Antelope Valley-East Kern Water Agency
Boron Community Services District
California Water Service Company (Leona Valley)
City of California City
Desert Lake Community Services District
Edgemont Acres Mutual Water Co.
Edwards Air Force Base (base & Phillips Lab)
El Dorado Mutual Water Company
F. P. L. Energy, LLC
L.A. County Water Works District
Landale Mutual Water Company
Mojave Public Utilities District
Palm Ranch Irrigation District
Quartz Hill Water District
Rosamond Community Services District
Shadow Acres Mutual Water Company
Sunnyside Farms Mutual Water Company
U. S. Borax
Westside Park Mutual Water Company
White Fence Farms Mutual Water Co. #1, #2
White Fence Farms Mutual Water Co. #3

Those *not affected* by the conversion (see note)

Aerial Acres Water Company
Airway Mutual Water Company
Antelope Mutual Water Company
Antelope Park Mutual Water Company
Antelope Valley Progressive Club
Aqua J Mutual Water Company
Association of Irrigation Water Users
Averydale Mutual Water Company

Baxter Mutual Water Company
Big Rock Mutual Water Company
Bleich Flat Mutual Water Co.
Colorado Mutual Water Company
Crestmore Village Water Company
Crestmore Water Association
Evergreen Mutual Water Company
40th Street Mutual Water Company
Golden Valley Municipal Water District
Green Grove Mutual Water Company
Green Valley County Water District
J.L. Ralphs Water Company
Lake Elizabeth Mutual Water Company
Lancaster Mutual Water Company
Land of Promise Water Company
Land Projects Mutual Water Company
Little Baldy Water Company
Littlerock Creek Irrigation District
Llano Del Rio Water Company
Llano Falls Mutual Water Company
Llano Mutual Water Company
Mascall Water Company
North Edwards Water District
Old Times Mutual Water Company
Palmdale Water District
Piute Mutual Water Company
Reesdale Mutual Water Company
16th street East Tract Company
Sleepy Valley Water Company
Spring Valley Ranch Tract Water Company
Sundale Mutual Water Company
Tehachapi Cummings Water District
Tierra Bonita Mutual Water Company
Tweedy Lake Corporation
W & S Mutual Water Company
West Valley County Water District
Wilsona Garden Mutual Water Company

Note: Companies with emergency interconnections should make a plan for water exchanges. In some cases, advance notification of conversion may be the safest approach.

Partial List of Communities using Chloramines to Protect their Water Supply

California

San Francisco	Los Angeles	Santa Maria	Santa Barbara
Oakland	City of San Bruno	Redwood City	Santa Clarita
City of Burlingame	City of Goleta	Santa Clara	San Diego
Burbank	Glendale	Pasadena	Santa Monica
Beverly Hills	Long Beach	City of Riverside	Anaheim
Manhattan Beach	Palo Alto	City of El Segundo	City of Ventura
Irvine	Costa Mesa	Newport Beach	Tustin
Santa Ana	Orange	Corona	Norco
Murietta	Lake Elsinore	Temecula	Calabasas
Agoura Hills	Westlake Village	Hidden Hills	City of Pleasanton
City of Livermore	City of Antioch	City of Brentwood	City of Pittsburgh
City of Martinez			

California Military Installations

Vandenberg Air Force Base	March Reserve Air Base	Los Angeles Air Force Base
Miramar Marine Corp Air Station		

Other U.S. Cities

Boston, Ma	Lafayette, In.	Portland, Me
Denver, Co.	Bangor, Me.	Wichita, Ks.
Tampa, Fl.	Miami-Dade, Fl.	Lewiston, Me.
St. Louis, Mo.	Auburn, Me.	Boothbay, Me.
Indianapolis, In.	Cape Elizabeth, Me.	Ft. Myers, Fl.
Washington DC	Virginia Beach, Va.	Chesapeake, Va.
Topeka, Ks.	Clearwater, Fl.	Omaha, Nb
Fargo, ND	Greenville, Tn.	Raleigh, NC
Dallas, Tx	Durham, NC	Bethany Beach, De
Houston, Tx	Arlington, Va	Maui, Hi.
Minneapolis, Mn	Barrington, Il.	

Canada

Toronto	Ottawa	Edmonton
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Other International Locations

London, UK	Sydney, Australia	Finland (Nationally)
Israel (Nationally)		

“Approximately 55% of 11.8 million people living in the 25 largest cities in California currently receive water disinfected with monochloramine” - (Center for Disease Control; “Reducing Legionella Colonization of Water Systems with Monochloramine” - April 2006)

Websites :

Chlorine Chemistry Council Website - <http://www.waterandhealth.org/>

EPA Site - <http://www.epa.gov>

Ca. Dept of Public Health/Drinking Water Division -
<http://www.cdph.ca.gov/programs/Pages/DDWEM.aspx>

CLWA Flyer -
<http://www.clwa.org/about/pdfs/Questions%20and%20Answers%20on%20Chloramines.pdf>

CCWA Flyer - <http://www.ccwa.com/chloramines.htm>

MWD Flyer - <http://www.mwdh2o.com/mwdh2o/pages/yourwater/quality/tap05.html>

San Fran PUC Flyer - http://sfwater.org/mto_main.cfm/MC_ID/13/MSD_ID/166/MTO_ID/399