

## Groundwater recharge ponds

Not all our drinking water is sent through the water treatment plants.

The Santa Clara Valley Water District also operates a series of recharge ponds throughout the county. Water pumped into these ponds percolates down through the ground and into our deep underground aquifers. The water percolation process naturally cleans the water. Water pumped from our underground aquifers needs less treatment than water imported from rivers or reservoirs. The District manages the water storage in the aquifers which also prevents subsidence of ground-surface elevation levels.

Nearly half of the water used in Santa Clara County comes from wells that access our aquifers. Most of the other half is imported through the Sacramento - San Joaquin River Delta.

**It's what we drink!**



*Groundwater recharge ponds (or percolation ponds) adjacent to Los Gatos Creek and Highway 17. These ponds are kept filled with water from Lexington Reservoir or imported water from the Delta.*

## Santa Clara Valley Water District Ozonation Process

### Improving Drinking Water Quality

Upgrades to the Santa Clara Valley Water District's three water treatment plants will provide Santa Clara County residents with higher-quality, better-tasting water. By summer 2006, the Water District will be using ozone in the water treatment process at Santa Teresa and Penitencia water treatment plants. Ozonation upgrades will begin at the third plant, Rinconada, in 2009.

*Santa Teresa - above the Almaden Valley*



*Rinconada - in the Los Gatos foothills*

*Penitencia - in the foothills near Milpitas*



### what we do

The Santa Clara Valley Water District manages wholesale drinking water resources and provides stewardship for the county's vast watersheds including a series of reservoirs, groundwater basins and more than 800 miles of streams. The district also promotes flood protection for Santa Clara County's 1.7 million residents. Visit our Web site [www.valleywater.org](http://www.valleywater.org) or call the **Community Relations Hotline** at **(408) 265-2607**, ext. **2238**.

### Why ozone?

The ozone used to disinfect drinking water is the same safe, colorless gas that naturally occurs in our atmosphere.

When ozone is bubbled through water, it inactivates a wide variety of harmful microbes which are resistant to traditional chlorine disinfection. Also, ozone dissipates more quickly than chlorine and leaves fewer by-products behind in the purified water.

Ozonation cleans water to a higher standard and removes unpleasant odors and flavors.

*"Ozone is highly effective in destroying all types of pathogens in drinking water. Using ozone to disinfect our tap water helps us meet state and federal drinking water standards which are among the highest in the world."*

Marty Fenstersheib, MD, MPH  
Health Officer, Santa Clara County



## The history of ozonation:

Ozone has been used to treat drinking water in Europe for more than 100 years. The first ozonation plant was built in Holland in 1893. Ozone destroys a wider range of organisms in drinking water than chlorine. In addition, ozone reduces the amount of chlorine used to purify water, leaving fewer by-products that can be carcinogenic in large amounts. However, until recently, the cost of using ozone in the purification process has been much higher than the cost of chlorination and most water in the U.S. has been treated with chlorine only. Ozonation is now the leading choice for large municipal water systems. The Water District has recently invested \$60.3 million to upgrade the Santa Teresa Water Treatment Plant to ozonation.

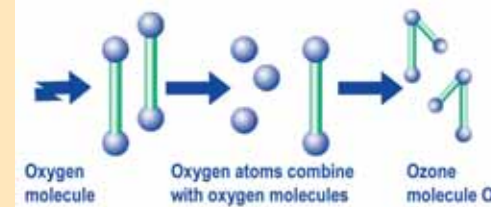
The Santa Clara Valley Water District has planned ahead and is upgrading all of its water treatment facilities to ozonation so that we can continue to deliver clean, safe water of the highest quality to Santa Clara County residents.



The ozone generator at Santa Teresa Water Treatment Plant produces ozone by running an electrical current through gaseous oxygen. Because it degrades rapidly, ozone must be produced on-site and used immediately.

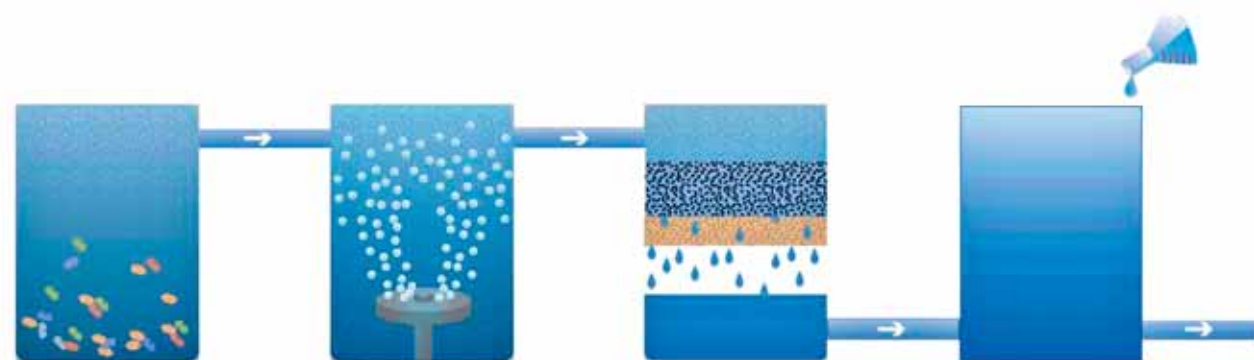


Ozone is a delicate gas with three oxygen atoms



## Ozonation process steps:

Untreated water is treated in basins that clarify the water by allowing large particles to cling together and settle to the bottom. Clean water is piped into ozone contactors and disinfected. Disinfection byproducts are removed by filtering the water through granulated activated charcoal. Small amounts of chloramine are added to protect the water from contamination during storage in holding tanks and on its journey to your home.



In the first step, chemicals called coagulants are added which cause solid particles in the water to clump together and settle to the bottom.

The water on top flows to the next step.

Next, water is disinfected with ozone gas. Ozone gas is piped into deep basins where it is bubbled up through the water, killing bacteria, viruses and parasites and destroying other taste and odor compounds.

After that, the water trickles through a huge filter with a deep layer of carbon and fine sand which removes microscopic particles.

Finally, a small amount of chloramines (a mixture of chlorine and ammonia) is added so that the water remains germ-free as it travels through miles of pipes to the tap.



San Luis Reservoir experiences seasonal algae blooms which affect the quality of the water.

## It tastes better, too

Ozone purifies water to a higher standard than is possible through chlorine treatment. Ozone also removes most of the objectionable tastes and odors from water. Bad taste can be caused by a combination of many organic compounds. Almost half of Santa Clara County's water is imported through rivers and open aqueducts from hundreds of miles away. Natural organic compounds enter the water as it travels down the Feather and Sacramento rivers from Northern California and from snowmelt in the Sierra Nevada. These organic compounds plus agricultural and urban runoff and seasonal algae growth in reservoirs, all affect the water's odor and taste.

One particular challenge is the algae blooms in our water supply reservoirs - particularly in San Luis Reservoir - that occur in the late summer months. This is the time when imported state and federal water is most needed, and reservoirs are at their lowest. As reservoir levels drop, water temperature increases and winds stir up nutrients which feed the algae. Before the upgrade of our plants to ozone treatment, residual algae in our source water made it difficult to purify without increasing chemicals or elevating the by-products from the treatment process.

In addition to ozonation, the Water District has added the equipment for advanced oxidation as an optional seasonal treatment step. This new process will add hydrogen peroxide which will further improve the taste of our tap water.

Many large metropolitan cities in the United States now disinfect at least a portion of their drinking water with ozone. When the ozonation upgrades are completed at all three Water District water treatment facilities, up to 240 million gallons of purified drinking water can be produced each day for Santa Clara County residents.