



City of Foster City / Estero Municipal
Improvement District (EMID)

CHLORAMINE CONVERSION
Making Great Water Better

PREPARE FOR THE CHLORAMINE CONVERSION

In the Fall of 2003, the San Francisco Public Utilities Commission (SFPUC) will switch from chlorine to chloramine disinfection for drinking water. Chloramine is a combination of chlorine and ammonia that is considered a better disinfectant. Many Bay Area communities are successfully using chloramine disinfection.

Chloramine lasts longer in water to more effectively remove pathogens such as bacteria and viruses. Compared to chlorine, chloramine produces lower levels of trihalomethanes, suspected carcinogens that form when chlorine mixes with natural organic substances in water.

Water customers in San Francisco and communities in San Mateo, Santa Clara and Alameda counties will begin receiving chloraminated water in Fall 2003.



Protect Your Fish, Amphibians and Reptiles

How are fish, amphibians and reptiles affected?

Chloraminated water passes through gills, directly entering the fish, amphibian and reptile bloodstream. Chloramine must be removed as it binds to iron in red blood cell hemoglobin, causing reduced cell capacity to carry oxygen. However, chloraminated water is safe for people and animals to drink as it is neutralized by the digestive process. It is also safe to cook with, bathe in, and for other general uses.

How do I prepare for chloramine?

Just like chlorine, chloramine will need to be removed from water for fish, amphibian and reptile use. The products listed below are available at fish and pet supply stores. Aquarium or pond supply professionals, published materials and pet owners recommend the following:

- Treatment products (drops or tablets) that remove both ammonia and chlorine
- Biological filter (for ammonia) and chemical agent (for chlorine)

It has been reported high quality activated carbon filtration and reverse osmosis remove chloramine under optimum conditions, but are expensive and must be closely monitored to ensure their effectiveness.

Will boiling remove chloramine?

Chloramine cannot be removed by boiling water, adding salt, or letting water stand in an open container to dissipate the chloramine.

How can I test my water?

Aquarium owners will want to test their water for ammonia concentrations in addition to chlorine. A test kit with the correct active agent for ammonia can be helpful for monitoring. Two basic kits are available, and should be selectively used:

- Nessler reagent. This kit will give a faster reading, but will also give a false reading if ammonia binders have been used.
- Salicylate reagent. This kit provides an accurate reading when ammonia binders have been used.

Any tips for aquarium owners?

Chloramine is toxic to both fresh and salt water fish. Drinking water used with artificial sea salts for makeup water in salt water fish tanks must have the ammonia and chlorine removed first.

The City of Foster City/Estero Municipal Improvement District (EMID) has information about the Chloramine disinfection change scheduled for Fall 2003.

Visit our website at www.fostercity.org
or call the Public Works Department at: (650) 286-3270

How will chloramine affect ponds?

Chloramine should ideally be removed from water before being added to a pond. The San Diego Koi Club suggests the following guidelines from their experience:

- If less than one percent of the total water volume of your system is replaced at any one time, the pond should absorb new chloraminated water with little to no impact on fish.
- If one to ten percent of pond water volume is replaced, sodium thiosulfate and a biological filter effectively remove chloramine.
- If more than ten percent pond water volume is replaced, an ammonia binder is needed.

Need more information?

The following resources may be helpful to you:

www.sfaquarium.org
www.sfbakc.org or www.vcnet.com/koi_net/
www.koiclubsandiego.org
www.aquariacentral.com

The SFPUC also has additional information about the chloramine conversion scheduled for Fall 2003 at: [**better.sfwater.org**](http://better.sfwater.org)

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