

Water Treatment

As most pond hobbyists know, cities add Chlorine to our drinking water as a disinfectant and for the removal of tastes and odors. Although very safe for us to drink, Chlorine can be toxic to our fish. It can also kill the nitrifying bacteria that keep our ponds stable and healthy. Therefore, we usually try to neutralize or remove it from our water.

What many of us may not know is that a lot of cities, particularly those with older infrastructure, are no longer adding chlorine to our water. The problem water treatment facilities have with chlorine is that it's unstable and easily dissipates from the water. This means that the treatment plant would need to put in higher levels of chlorine, so that they can be sure that some will remain in the water when it reaches your home.

Many water treatment plants have started treating tap water with chloramine instead of chlorine. Chloramine is a combination of chlorine and ammonia. It's much more stable than chlorine, does not dissipate from the water as easily and it isn't as likely to combine with other chemicals. This has been a great solution for them. However, this has not been so good for our fish.

Chlorine can be removed in several methods. Although the chlorine in chloramine is a little harder to remove, it can be removed by several different types of filters or chemicals. However, just removing the chlorine still leaves ammonia in the water. As you hopefully know, ammonia is toxic to fish, even in low levels. If you simply remove the chlorine, you are solving one problem and creating a new problem (ammonia).

There are many methods to remove chlorine or fully remove chloramine from your water. According to the San Francisco Water department, one of the easiest ways to remove chloramine is to boil your water for 20 minutes. This might be okay for your coffee, but not practical for a 10% water change on your 5,000 gallon pond.

Activated carbon filters will remove chlorine very well. This is the same technology used for many aquarium filters. The simple versions will remove the chlorine but won't do very well on chloramine. Filter media using Catalytic Granular Activated Carbon (CGAC) can be effective at reducing chloramine. Just like in our aquarium filters, the carbon does not last forever and must be replaced periodically.

Pre-made inline filters for chlorine and chloramine are available from several different sources. The Gard'n Gro from www.cetsolar.com is an example with a replaceable filter. The second example from www.tricker.com does not appear to have a replaceable filter and only claims to filter a maximum of 10,000 gallons of city water. Both of these only claim to remove chlorine.



To remove chlorine or chloramine, both The Filter guys (www.thefilterguys.biz) and Aquatic Eco-Systems (available locally from Koi Acres) have canisters and filter media available for this purpose.



This type of filter can also be built from parts available at Home Depot or Menard's. You will need to purchase the canisters along with the hardware to connect to your garden hose and to connect 2 canisters together if needed. Depending on the filter media, you may need to use 2 canisters. The first canister would be used to remove particles in the water before being treated by the CGAC media.

HOWEVER, be careful when buying the filter media. Most of the actual filters found at Home Depot or Menard's say they remove "chlorine taste and odor". They do not say anything about actually removing chlorine. I have not tested any of their filter media, so I can not say for sure. Although you can buy the canisters at these stores you may need to find another source for the filter media.

The useful life span of the filter media for inline filters varies depending upon the manufacturer. Some claim to treat only 7,500 gallons, while others claim to treat 30,000 gallons. The other consideration is the flow rate over the filter media. Depending upon the product, the flow rate over the media will have an affect on the filter's removal performance.



Another type of in-line filter is the whole house filter system. The PureMaster V-750 system available from Koi Acres (www.koiacres.com) uses an advanced multistage filtration process, insuring maximum contact time, through over 75 pounds of high-grade, special blended and layered water filtration media. The PureMaster™ V-750 is a Point-of-Entry (POE) system designed for municipally treated water but may also be used, in many cases, as a well water filter or treatment system. The System is designed to treat over 750,000 gallons of water (about 7-10 years use for average household).

There are also several different chemicals available to remove chlorine, chloramine, and ammonia. You will need to find out what you should be treating for before purchasing one of these. Some treat chlorine only and some treat chloramine. If you are using a chlorine only product with chloramine treated water, you should also use an ammonia remover. Some of these can be found in a less costly powder version. As with all chemicals you must read the directions. Using an excessive amount of any product could also harm your fish.



The first step in treating your water is to determine what you need to treat it for. Call your local water department and ask what they are putting in your water. The City of Minneapolis uses chloramine while the City of Eden Prairie uses only chlorine. The Eden Prairie Water Department uses a minimal amount of chlorine, about 25% of the maximum set by the EPA (4ppm). With normal

dissipation, they claim the chlorine level should be almost nothing (0.01 ppm) by the time it reaches the faucet.

The next thing to consider is how you are adding water to your pond. Do you remove and add water at one time, as in a back-wash of your bead filter? Or do you use an auto-fill and continuously top off your pond?

If you are using the auto-fill method, an inline filter may be your best option. Any of the filters mentioned above could be used. This brings up the question of what do you need to treat for.

If your city is using only chlorine, then one of the pre-made chlorine removers may be an easy solution.

If your city uses chloramine, then you should use one of the canister type filters (either pre-made or the do it yourself version) or a whole house system. You will need to make sure the filter media you purchase specifies that it removes chloramine.

If you only perform “all at once” water changes, then adding the appropriate chemicals may be your most cost-effective choice. The cost of building or purchasing an inline or canister filter plus the cost to replace the media when needed in most cases is more than the cost of the chemicals required to remove chlorine or chloramine.