Water Changes

What is a water change?

A water change is the physical removal of water from your system and replacing it with new, clean water from your hose or tap. This is part of the general maintenance that **must** be performed regularly for all water containing fish, including all ponds and aquariums.

Why are water changes important?

Water changes remove many important chemicals from your system. Most importantly is the removal of nitrogen products. The final stage of the aquatic nitrogen cycle is nitrate. This is formed by the breakdown of ammonia from fish waste into nitrite and finally nitrate. Nitrate cannot leave the system by itself and needs to be physically removed from the system, or else your fish will get sick. Excessive nitrate can have the same physical symptoms as high ammonia and nitrite. Your fish can suffocate due to asphyxiation, have increased parasite burdens, and suffer from secondary bacterial and fungal infections.

Other chemicals, such as hormones caused by spawning and stress can also build up in your system. Increased hormones can lead to increased stress, making fish more susceptible to secondary bacterial and fungal infections.

How often should I do water changes?

Water changes should be performed at least once a week. The size and stocking density of your system will determine how much water you will need to remove. Approximately 10-25% of your water should be removed during each water change. Systems with more fish will need to change out more water. Use the discarded water to water plants and your lawn. Fish waste water is great for plants! While the water is draining or filling, take the time to do other maintenance, such as backwash filters or scrub the sides and/or bottom of your pond.

We at AVSNCA are aware that we live in an area of the country where water restrictions are common. Unfortunately, skipping water changes will not save you any stress with your system. Forgoing water changes can lead to more disease, more sick fish and eventually, more dead fish. It is important that you understand that having a pond with fish has the same responsibilities associated with having any other pet. If you cannot keep up with regular water changes due to financial constrictions, you may consider removing your pond and finding your fish new homes.

Can I get around having to do water changes by having plants in my system?

Plants can remove a small portion of the nitrate in your water, but for most systems, a few plants scattered throughout your system will not have any recognizable impact. Some fish will also snack on your plants if they have regular access! In order to have any impact on your system's nitrate concentration, you will need a **considerable** amount of plants.

New aquaponic systems are being developed to pump fish waste water through large arrays of plants to help improve water quality. This involves a large quantity of plants as stated previously.

Don't forget the dechlorinator!

Adding new water to your system from a city source will contain chlorine or chloramine. These products need to be removed from the water before or while it is being added to your system. Declorinators are available at many pet stores as well as pond supply stores. Make sure you have your water tested to see what chlorine source you have so you know which you need to treat. Chloramine, when broken down by a dechlorinator, will add more ammonia to your system, so make sure you are aware which chlorine additive your water has! Well water should also be tested in order to make sure nothing has been added.

Testing your water source should be repeated yearly. Changes in your source water can lead to **significant** impacts in your system. This includes other parameters such as alkalinity, hardness, pH and ammonia.

If you have any questions about water changes or water quality chemistry, please contact Dr. Jessie Sanders at ncfishvet@gmail.com or (831) 278-1081.