
Fish in the Classroom Education Program

Water Quality

Water quality is very important to fish health. A fish will become stressed in poor water conditions, and stressed fish are more likely to become ill. The following are guidelines to follow to ensure that proper water quality is maintained.

Temperature

✓ **How Often:** Every day

Possible harm to fish: Stress leading to illness, sudden death

Fix it: New heater, adjust heat controls on existing heater

Tropical freshwater fish prefer warmer water of 72-80° F. Use a thermometer designed for aquariums placed as far away from the heat source as possible to get an accurate reading. If the temperature is abnormal, check the heater and the ambient room temperature. Replace a broken heater right away, or adjust the heat as necessary to maintain a constant, comfortable temperature.

pH

✓ **How Often:** Once a week and after a death or illness

Possible harm to fish: Stress leading to illness, sudden death

Fix it: Water change, liquid buffers

Testing the pH level lets you know how acidic or basic your water is. Fish live in many environments with many water parameters and it is important to know what your fish prefer.

Most tropical freshwater fish prefer a neutral pH of 6.5-7.5. Tap water usually has a pH around this level, but depending on your location this may not always be

true. Always test the pH of your tap water when setting up a new aquarium.

Fish are very sensitive to a sudden change in pH, and even a shift as small as 0.2 is enough to cause them stress. The pH scale is logarithmic and so a pH of 6.5 is 10 times more acidic than a pH of 7.5 even though the change may seem minute. This is one reason why it is important to acclimate fish slowly when introducing them into your aquarium.

The pH will drop slowly over time, so unless there is a sudden jump in pH it is not necessary to adjust it as long as the fish seem unstressed and healthy. Regular water changes and gravel vacuuming are enough to regulate the pH most of the time. If you do need to adjust the pH, there are several liquid buffers sold at pet stores that will restore the proper balance to the water.

Ammonia

✓ **How Often:** Once a week and after a death or illness

Possible harm to fish: Stress leading to illness, sudden death

Fix it: Water change, ammonia eliminating products

Ammonia is produced when fish go to the bathroom. It is predominant in a new tank, but is quickly consumed by beneficial bacteria in an established tank. Because it is extremely toxic to fish, ammonia levels should be addressed right away. Perform a water change and check pH levels, or add an ammonia eliminating product, which can be found at most pet stores. Try to identify the source. It may be that there are too many fish in the tank and not enough bacteria to eat all the waste. If ammonia

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levels are moderately above normal, perform a 25% water change and test again. If ammonia levels are well above normal, perform a 50% water change and test again.

Nitrite

✓ **How Often:** Once a week and after a death or illness

Possible harm to fish: Stress leading to illness, sudden death

Fix it: Water change

Nitrite levels will be high when establishing a new tank, but should level off and recede once a tank is cycled. Nitrite levels can rise during mini-cycles your tank may go through. A rise in nitrite indicates trouble in the tank, and should be addressed immediately. Commonly, nitrite levels are high in an overcrowded tank. If nitrite levels are moderately above normal, perform a 25% water change and test again. If nitrite levels are well above normal, perform a 50% water change and test again.

Nitrate

✓ **How Often:** Once a month

Possible harm to fish: Stress leading to illness

Fix it: Water change

Nitrate is not as toxic to fish as nitrite or ammonia, but high levels can cause stress to fish which can lead to fish loss. Nitrate is the end product of the nitrogen cycle, and its concentration can be controlled by regular water changes.

Phosphate

✓ **How Often:** Monthly in planted aquariums or if algae is a problem in other aquariums

Possible harm to fish: None (except in extreme cases)

Fix it: Phosphate-absorbing filter media, water change

Phosphates are not toxic to fish and are helpful in a planted tank, but can serve as a nutritional source for algae. For this reason it is not necessary to test for phosphate levels in a tank with no live plants, unless there is an algae problem. Over-feeding any dry food, especially low quality fish food that contains high levels of phosphates, is the leading cause of high phosphate levels. There are filter media on the market that can help remove excess phosphate, and water changes can also be done to curb the problem.