

Fish live in water that much is obvious to us but do we realise how much the chemicals that form their water can impact upon them in both beneficial and negative ways?

Firstly the aquatic environment should be protected from all forms of manmade pollution and kept as close to the natural balance as possible. There is often a temptation to use chemicals to solve problems that have arisen in fish keeping. More often solving an issue with one chemical will introduce a new problem somewhere else; all water chemistry is connected. For example suddenly removing high levels of PO₄ phosphate can reduce the waters [buffering](#) capacity which can cause [PH](#) crashes or make the PH change; this in turn can change NH₄ to NH₃ etc....

The best solution to correct issues in the aquarium water is to do water changes with good quality water and slowly correct the issue. When changing water it is always a good idea to try and keep key parameters as close as possible, a seneye device can be used to judge this. It is not just fish that are adversely affected by sudden change; many problems with filtration are caused by upsetting the [bacteria](#) through shocking them. If pollution is entering the aquarium from water change then it may be time to look at alternative sources of water or a water filter.

Fish are very adaptive so even though we often strive to reach 'ideals' fish can be happy in much more varied range of parameters than we imagine. What fish and all other aquatic organisms don't like is change, as a rule if all looks well only make small changes over a long period!

The following parameters are the main ones we recommend watching to ensure the environment is stable.

Fast changing parameters that should be constantly monitored.

Water line as even though obvious aquariums can leak.

[Temperature](#) is often overlooked but the wrong temperature or sudden changes can cause damage to fish.

[PH](#) - the potential of hydrogen shows how acid or base your water is. Sudden changes can kill.

[NH₃](#) - ammonia gas is always present in aquariums where fish is present. There are a number of reasons why it can suddenly [change](#) and it is a deadly toxin. This is the number one killer of fish and very rarely directly measured.

These are slower changing but important parameters.

NO₂ - nitrite, this is the second stage of the [bacterial nitrification](#) process for ammonia, it is toxic to fish but less toxic than ammonia.

NO₃ - nitrate, this is the last stage of the aerobic nitrification process, if left unchecked levels will build until water changes take place. High levels will encourage algae growth.

[KH](#) - Carbonate hardness is essential for fish health and controlling pH swings.

[Light](#) - it doesn't affect fish much but all plants and corals health is dictated by light quality and quantity.

These parameters might be useful to measure and know, especially if things aren't going great.

GH - General Hardness. This is a measure of the calcium and magnesium in the water.

PO₄ - Phosphate, High levels will encourage algae growth.

NH₄ – ammonium, although not toxic itself a change in temperature or pH can release it into NH₃.

There are many more exotic chemicals that can be measured in the aquatic environment but most of these will help organisms thrive the list above is designed to help them first survive.