

Tap Water Test

Introduction

Our local water supply has changed dramatically since last time I had an aquarium, it has moved from one lake to another and when showering there is a strong chlorine smell so this is where I will start. I ordered a water testing kit to see what we are dealing with. If it overly restricts the species which can easily be kept the whole thing is going to become too difficult to maintain.

I'm only interested in assessing the pH and hardness of the water, I can see no point in looking at other parameters at this point as they are all heavily influenced by what is in the tank (i.e., fish and plants) once it is up and running if I get that far.

Any product prices are from April 2023.

What Did I Use?

TDS Pen

These measure TDS (Total Dissolved Solids) in the water, mine came from Amazon and cost £6.99 at the time of purchase. It is very generic and came in a pointless case and does not have a changeable battery so will have a limited lifetime but will do the job for now. It was listed as *Messee LCD Digital TDS-3 Meter*.



Figure 1 - TDS Test Pen

Water Testing Kit

I purchased an Aquarium Lab Multi-Test kit from Amazon, it cost me £23.78 at the time of purchase and will test most of the commonly tested water parameters including Ammonia, Nitrite, Nitrate, pH, General Hardness and Carbonate Hardness. It is only the last three of these that I'm interested in at present, but the others will be handy if I progress to setting up a tank.

The kit comes with everything required and looks like a good comprehensive beginner's kit, so I was happy with my purchase. The instructions are clear, and it is easy to use.

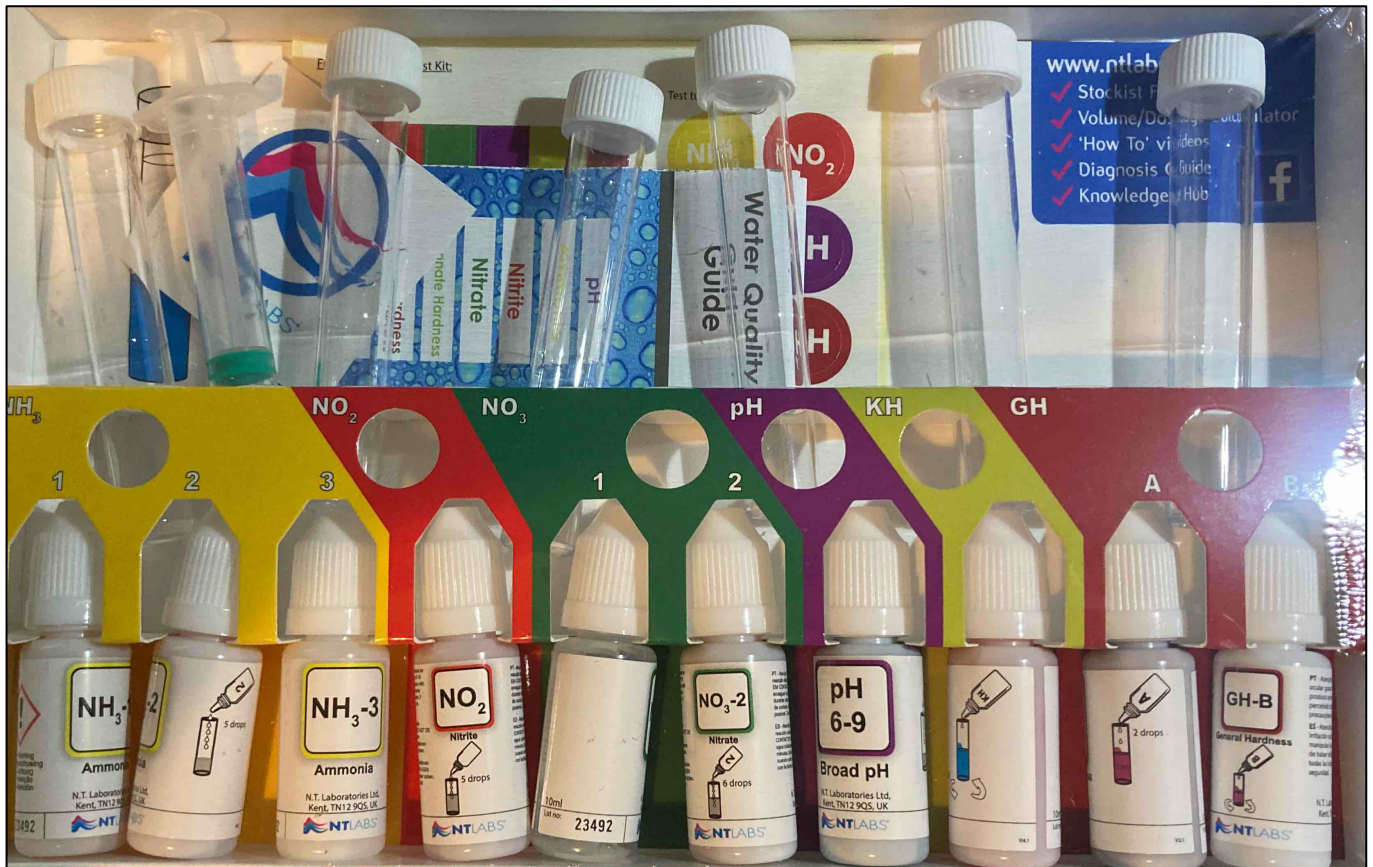


Figure 2 - Aquarium Lab Multi-Test Kit

The Testing

Introduction

There are several different test kits on the market, all are trying to achieve the same thing but may work in different ways. It is essential that you use clean equipment and follow the instructions to the letter, or your results are likely to be inaccurate.

TDS

I poured a mug of tap water into a mug and let it sit for a couple of minutes before sticking the tip of the meter into it. The reading was consistent over several tests at 27ppm (parts per million). Some way below what I'd like.

This is quite a low reading and suggests an absence of minerals (e.g., calcium) in the tap water. It could potentially impact fish health or growth and prevent shrimp from being kept without water treatment of some type.

pH

pH is the acidity or alkalinity level of the water; different fish have different requirements, and it needs to be right, or they will be unhealthy or die. This kit requires the bottle to be shaken before adding 5 drops of the test to 5ml of water (measuring syringe provided).

My tap water has a pH of 7, this is just what I was hoping for considering the species of fish I'm considering keeping, good news.

KH (Carbonate Hardness)

This test is carried out in a different way. 5 ml of water are added to a test tube. 1 drop of the test is then added and shaken to mix. The water should then turn blue, one further drop of the test is added and shaken at a time until it turns yellow. The total number of drops is the KH reading.

My water goes yellow on the first drop, never turning blue. This means I have a KH reading of less than 1, this is bad news indeed. The tap water is not suitable for keeping fish without treatment. A KH of this level is likely to result in sudden fluctuations in pH (the KH effectively acts as a buffer) which may be fatal to fish.

I was hoping for a KH of between 4 and 8.

GH (General Hardness)

This test is a bit more convoluted. 5ml of water is mixed with two drops of the first of two test bottles, it will turn pink. The second test bottle is added and mixed one drop at a time until it turns blue.

My water has a GH of 1 meaning it is very soft, again this is quite bad news as I was hoping for something between 4 and 8.

Conclusions

I can't escape the fact that my tap water is fundamentally unsuited for tropical fish keeping in the state it comes out of the tap.

- The KH is dangerously low
- The GH is dangerously low, this could be a significant problem in general but even more so for keeping shrimp
- The pH is OK but there is only limited scope for an increase
- The TDS is too low, I'm fairly sure that fixing the GH would address this too

What Next

The sensible side of me is telling me to call it a day and just give up. The water could be treated using something like Calcium Carbonate bit by including some crushed coral in my substrate (maybe 1 kg for my proposed 60 litre tank as a starting point) but these approaches are likely to increase the pH to an unacceptable level although it may start to reduce as the tank matures.

Water chemistry is a complex topic about which I only know a little. Individual water parameters cannot necessarily be adjusted in isolation as there is a knock-on effect.

I'm going to think on this for a while before my next major step. An option may be to add a smaller amount of crushed coral to the substrate and heavily plant the tank and then let it settle for a while before introducing a few hardier (from a pH perspective) fish to allow the nitrogen cycle to complete and see where this sends the pH. This would be an expensive exercise if it ends in failure.

Another option maybe to so the same thing but treat with calcium carbonate during water changes, at least this would be easier to 'reverse' but it may be a less stable environment.

Maybe a better bet would be to buy some calcium carbonate (it is cheap) and treat a bucket of water to see what the overall effect is over a period of a few days.

Overall, I'm feeling a bit disappointed by the change in our tap water and a bit despondent about the whole idea.