The Nitrogen Cycle - The Holy Grail of Fishkeeping - PART I - Ammonia

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Let's take it right back to basics. And by basic I don't mean simple. I am about to teach you how to solve 90 per cent of your fish problems, diseases and heartbreaking mortalities. As an aquarist, I have been involved in many aspects of fishkeeping over the years. I have bought, sold and traded. I have talked, taught, and torn my hair out on occasion, but at the end of the day, I never tire of explaining this concept to people. If there was a 'magic bullet' for fish, then this is the closest that you are going to come to it. This is also the single BIGGEST reason why people hang up their fish nets after only a couple of tries vowing never to re-enter the hobby again.

Do you know what 'New Tank Syndrome' is? No... It's not the official medical diagnosis for getting yet ANOTHER fish tank, though some that know me may disagree. New tank syndrome is what happens when you read up all about the wonderful world that is fish, think to yourself, I'm definitely going to give THAT a go, and roll up at your LFS (local fish shop), walking away with a new tank, a couple bags of fish, some dechlorinator, a brand spanking new filter, heater, and some other weird and wonderful liquids and powders you were given assuring you that you will 'definitely' need this!

You get home, throw it all together, stand back and marvel at your exciting new underwater world. Wow, that was easy! However... this is generally where the fun stops... guys.

Within 2-3 days people start noticing there tank going milky white. Before you go and blame the kids for dumping their sippy cup full of Quik in the tank, let me explain what is happening. Ammonia causes your tank to look like it has had milk poured in it. It will be a cloudy whiteness. This is your first and most obvious clue. The second will be your fish gasping for air at the surface. This means you have ammonia in your tank.

But how the hell did it get there in the first place and why is it killing my fish?!

When you feed your fish, something needs to come out the other end. Fish use urea to expel nitrogen waste from there bodies. This in turn becomes ammonia (NH_3) and ammonia causes milky whiteness. Ammonia is toxic to fish and will cause them to suffocate, it causes internal injuries and blood streaking and eventually the fish WILL die.

Fortunately an amazing force of science has come to our rescue and is able to utilize processes that break this ammonia down into substances that are no longer as toxic to fish. This amazing force is NATURE, and we should utilize her natural benefits wherever possible. Nature has kindly provided us with little workhorses within our home aquarium. These come in the form of bacterias. I hear you say eeeewww!!!... but these bacterias are the good kind. (think yoghurt but different).

The have wonderful and exotic names but all we really need to know is that we need them there and they will eat ammonia. So how do we get them there? Well, you make them a nice home and you wait for them to move in. A nice home for a beneficial bacteria is basically anywhere in your tank. Rocks, sand, plants... anywhere! But the BEST place for your bacteria is INSIDE your FILTER! Yes, thats right, despite popular belief, catching sediment and dirt is about 10 per cent of your filters REAL job. The reason you really go out and buy a filter is because it comes with a sponge, right? This sponge is extremely porous (full of holes) which allows the sponge to have an incredible amount of surface area even within a relatively small overall area. And because your filter constantly pumps old aquarium water over this sponge it is also the place where the bacteria will be subjected to the greatest amount of ammonia allowing them to break it down most effectively and providing them with a food source. Whew!! Still with me? Great! (I assume those that said no will go back and re-read :)

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That's part one guys... and there is more to come. This is in nice easy to understand terms for anyone just starting out in the hobby. I don't want to bore you with a mile long essay but there are more points that we have to cover. Stay tuned for part II of The Nitrogen Cycle.