adding new fish to established a tank, when the filter fails due to power or mechanical failure, and when medicating sick fish.

Symptoms:

-Fish gasp for breath at the water surface
-Fish hang near water outlets
-Fish is listless
-Tan or brown gills
-Rapid gill movement

Nitrate

The significance of nitrates in the Aquaponics is arguably less understood by fish keepers than the effect of ammonia and nitrites. Although nitrates are not directly lethal in the way ammonia or nitrites are, over time high levels of nitrate have a negative effect on fish, plants and the aquarium environment in general.

Effect on Fish

Fish will feel the impact of nitrates by the time the levels reach 100 ppm, particularly if levels remain there. The resulting stress leaves the fish more susceptible to disease and inhibits their ability to reproduce.

High nitrate levels are especially harmful to fry and young fish, and will affect their growth. Furthermore, conditions that cause elevated nitrates often cause decreased oxygen levels, which further stress the fish.

Nitrates and algae

Elevated nitrates are a significant contributor to undesirable algae growth. Nitrate levels as low as 10 ppm will promote algae growth. Algae blooms in newly setup tanks are usually due to elevated nitrate levels.

Although plants utilize nitrates, if nitrates rise faster than the plants can use them, the plants can become overgrown with algae, ultimately leading to their demise.

Where do nitrates come from?

Nitrates are a by-product of nitrite conjugation during the latter stages of the nitrogen cycle, and will be present to some degree in all aquariums. Detritus, decaying plant material, dirty filters, over-feeding, and over-stocking the tank, all contribute to increased production of nitrates.

Water used to fill the aquarium often has nitrates in it. In the United States, drinking water may have nitrates as high as 40 ppm. Before adding water to your tank test, it for nitrates so you know if the levels are unusually high in your water source. If nitrates are above 10 ppm, you should consider other water sources that are free of nitrates.