

Marine (Reef) Aquariums need to have an oxidative environment;

We have observed over the last 46 years that we've been in the saltwater retail market, that the number one reason for failure and discouragement with especially Reef Aquariums is the high build-up of nasty looking hairy, slimy algae/red slime (cyanobacteria) and dead or dying corals (especially SPS corals). This is commonly called "old tank syndrome". The cause of "old tank syndrome" is mostly from the slow build-up of nutrients (mostly phosphate based) in the "particle filter" (polyester filter floss, carbon, filter socks, and especially the sand under the rock work.

We teach our customers not to allow this build-up in anything anywhere by adhering to what we call the "4-DAY-RULE". By changing the polyester filter fiber and/or socks (we do not use activated carbon or phosphate remover) at least every 4 to 7 days. And to not allow detritus (fish food waste loaded with phosphates) to accumulate under the rock work and/or in the sand. (Fish need to be fed to provide nutrients for their health and longevity and for the corals.) In 4 to 7 days, heterotrophic bacteria begin to break down wastes into types of waste that protein skimmers can't get out (easily), but hairy, slimy algae can use it as fertilizer. All food and wastes imported into an aquarium must have a way to be exported out. Rock sitting on sand is Analogous to a beautiful house with no outgoing septic system and all the commode waste are flushed under the living room rug, it's out of sight and out of mind, but sooner or later something is going to happen!

A way to virtually automatically eliminate the detritus build-up under the rock work is with what we call the "Spin Cycle Method". We raise the rock work up off the bottom glass by 2 1/2" to 3", with small, 1 1/2" inch pieces of flat sandstone or nicer yet, would be with upside down pointing Tonga Branch rock, as like a fingertip push up. Then with no sand placed directly under the rock work (maybe a little sand placed from the front of the rock work to the front glass). Then, for instance, with a 48" long by 18" wide tank, we use at least 1 to two (2) 800 gph propeller (wave) pumps up high to the left (pumping left to right and parallel to the flow of the sump return pump 24/7) and at least two (2) to three (3) 800 gph pumps at the back bottom right, pumping right to left under the rock 24/7. The number of pumps and power is in proportion mostly to the length and width of the tank. The water literally spins from top to bottom and bottom to top, keeping the light detritus and bacteria suspended so that they will eventually be sucked out into the overflow and/or intake strainer to be trapped and discarded by the filter fiber/sock (usually 200 micron), by remembering to use the "4-DAY-RULE". Also the extra fine detritus (usually less than 200 micron) dissolved wastes and bacteria can then be taken out of circulation by a good protein skimmer. Also, the rock in our sumps need to also be up 2.5" off the bottom and "egg-crate" light diffuser makes a good platform for the sump area and can be an additional way to hold up the rock in the main tank. All of the foregoing is designed to create an oxidative environment instead of a reductive one (especially under the rock). As an additional thought: Is there a real coral reef in the world that sits on top of sand??? In addition, we use a daily dose of vodka (starting with 1 ml per 40 gallons and a very good skimmer) The extra carbon (vodka) helps grow heterotrophic bacteria to help feed the corals, clams and sponges nutritious live food (bacterioplankton), and greatly increases the skimmate (loaded with phosphate) in the protein skimmer. We also dose daily with an easy-to-use, inexpensive, and mostly safe to use oxidizer: Potassium permanganate (KMnO₄, i.e. Kent Polyox). Ozone can also be used but only with great care and fairly expensive and non-maintenance free equipment. (Ref. Coral Magazine article, May/June 2018 pgs 68 to 74). These two(2) supplemental oxidizers (ozone and KMnO₄) oxidize virtually ALL organic (reductive) compounds and thereby release more consumable food and trace elements for bacteria, corals, sponges, and other filter feeders. This oxidation also greatly increases the production in the protein skimmer and thereby increases the Redox-potential (ORP) of the environment of our Reef aquariums. Also, the residuals from KMnO₄ treatment are Potassium (K) and Manganese (Mn) that are needed elements anyway, instead of possible ozone residuals like very poisonous hypobromite, hypochlorite (bleach), etc.

Be sure to vacuum residual detritus at water exchanges and to maintain calcium, magnesium, KH, and trace element levels.

All of the foregoing has virtually eliminated all unwanted microalgae, cyanobacteria and dead corals in our aquariums and our customer's reef aquariums (eliminated old tank syndrome).

Len Randel is an "old school", being a saltwater retail shop owner in Hot Springs, AR since Feb 1971 (one of the oldest shops in the 50 U.S. states.) and a former high school biology, chemistry and physics teacher, with some graduate hours in Marine invertebrate zoology at the University of South Florida.