

The efficacy of various filter media in removing copper from treated seawater.

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Abstract

Antiparasitic copper treatment is an integral part of routine marine aquaria quarantine, and, at times is even used to treat fish on exhibits. Free copper will react with calcareous materials (e.g. coral, rock or limestone), to form insoluble copper carbonate. This will leach out into fresh, untreated saltwater once a bath treatment is completed. As copper is extremely toxic to invertebrates, any residual copper can cause unexpected mortality.

This project investigated and compared the efficacy of various filter systems in removing residual copper in saltwater. The four filter media examined were activated carbon, zeolite, poly-filters and powdered banana peels.

The experiment was undertaken using five glass tanks each having seawater, airlines, copper lines and canister filters. The first tank was used as a control. There were three phases to the experiment. The copper tests, temperature and pH were taken through all three phases.

My results showered that zeolite together with powdered banana were the most successful in absorbing the most amount of free copper. The pH within this time frame was 7.8-8 and temperatures were relatively stable. After two months the zeolite became deactivated and activated carbon achieved good absorption of free copper. Powdered banana showed immense absorption however the pH levels would drop on certain days. The Poly-filter showed very slow absorption during the entire experiment through all three phases.

In conclusion activated carbon was the best filter media although taking a long period of time to absorb the free copper. Some results were zero or extremely low levels of free copper detected. Powdered banana was the second filter media that absorbed the most amount of free copper however the pH readings took time to stabilise. Environmentally these filters can be used in waste water treatment plants to remove heavy metals such as copper .



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Biography:

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