May 2020
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THE FILTER

Tampa Bay Aquarium Society
27 Years
St. Pete/Tampa Florida

Orange australe
Aphyosemion australe

Photo Mike Jacobs . . . 2005

TBAS . . . Since 1992

TAMPA BAY AQUARIUM SOCIETY

"THE FILTER"

Tampa/St. Pete, Florida

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Boy is the Covid-19 virus taking over EVERYTHING!!! I am so sorry to see this because I really miss all of you folks!!!

The TBAS BOD does not know exactly when we are going to be allowed to start having meetings again . . . your guess is as good as ours. I honestly wouldn't bet on May . . . and June I would think is only a "probable"!

The only thing we can do is simply keep our nose up and hope nothing bothers any of our "GANG" and keep one step in front of another!!

Keep reading the bulletin and keep opening the TBAS emails . . . that's the only way we can keep us together! If you see anyone in the club be sure to smile and say "HI" from all of us!!! I am hoping you and your family, including your fish, STAY WELL!!

Mike

Mike Jacobs, Editor TBAS Filter

Pimephales promelas
Rosey Red Danios
Photo by Mike Jacobs 2019

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Organic Removal Using Ultra Violet Light at 185nm

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Ultraviolet light is an effective TOC reduction tool. Reduction of Total Organic Carbons (TOC's) in water is critical for the microelectronics and pharmaceutical industries, and in processing wastewater. Reduction is achieved via - types of reactions initiated by UV that work to destroy and/or remove organic carbons.

The primary UV/chemical reaction is an indirect-oxidation process that begins when high-energy 185 nm UV (much higher than 254nm) dissociates water molecules, thereby creating hydroxyls (free OH- radicals). The hydroxyls created by UV are highly reactive and readily combine with other molecules, such as the hydrocarbon molecules that make-up TOC's. When hydroxyls combine with the TOC hydrocarbons they form water and carbon dioxide molecules; TOC's are destroyed, and the oxidation is complete.

The second type of UV reaction that works to remove TOC's is one whereby the ultraviolet photons dissociate organic molecules directly. This result is TOC removal by means of destruction.

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One of the challenges of using ultraviolet energy for TOC reduction is that 185 nm UV does not transmit as well through water as does 254 nm UV. Therefore, it is common to design TOC reduction systems using a “flow-rate adjustment” of 10% the flow-rate of a Regular 254nm UV disinfection system.

Ultraviolet TOC destruct systems typically utilize thin cylindrical bulbs capable of generating UV light in the 185 nm range, placed in close physical proximity to high-purity glass tubes through which the water flows. UV light possesses considerable energy and is absorbed by compounds and organisms at most wavelengths. However, certain wavelengths are more effective due to energy and absorption characteristics so as to induce maximum effect. For example, bacteria are most susceptible at 254 nanometers (nm). At a wavelength of 185 nm, the increased energy and adsorption sensitivity of oxidizable organic compounds leads to formation of hydroxyl free radicals in varying degrees of photochemical excitement. These hydroxyl (OH-) free radicals break various chemical bonds of organics, which in turn produce chain reactions, oxidizing most organics into carbon dioxide and water, the basic building blocks of all organic compounds.

Because of technology limitations, TOC destruct bulbs, while designed to produce light of 185 nm, emit most of their energy in the 254 nm range. For this reason, TOC units are typically sized 6-8 times larger than UV disinfection systems for the same flowrate or the flowrate is reduced down to only 10% of the rated flow rate. Properly applied and sized, ultraviolet systems are capable of achieving < 0.5 ppb TOC.

Reduction of Total Oxidizable carbons (TOC's) in water is achieved via three types of reactions initiated by UV that work to destroy and/or remove oxidizable carbons.

The primary UV/chemical reaction is an oxidation process that begins when high -energy 185 nm UV dissociates water molecules. thereby creating hydroxyls (free OH- radicals). The hydroxyls created by UV are highly reactive and readily combine with other molecules. such as the hydrocarbon molecules that make-up TOC's. When hydroxyls combine with the TOC hydrocarbons they form water and carbon dioxide molecules: TOC's are destroyed and the oxidation is complete.

The second type of UV reaction that works to remove TOC s is one whereby the ultraviolet photons dissociate organic molecules directly. This result is TOC removal/ TOC reduction by means of destruction.

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TOC Reduction

Efficient in high-volume ultrapure water applications, UV systems can effectively reduce Total Organic Carbon (TOC)

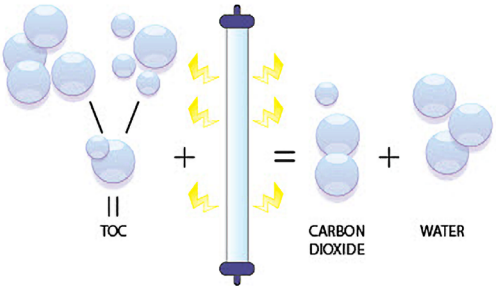
Reduction of total organic compounds (or total organic carbon) is critical for a number of industries who use ultrapure water, such as microelectronics, pharmaceuticals and wastewater processing.

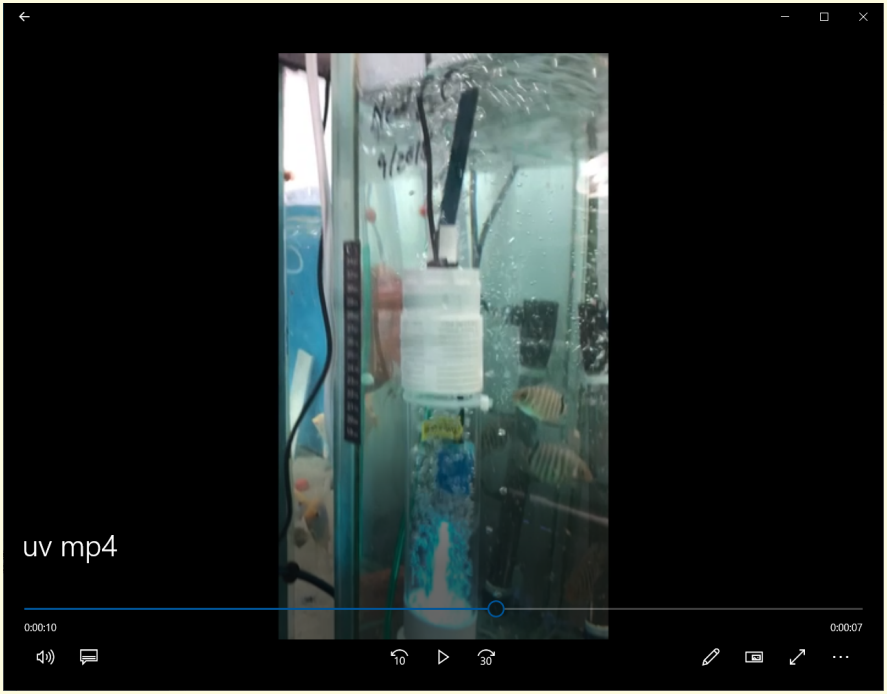
Aquafine TOC systems have the flexibility to serve indoor or outdoor installations and are available in modular skid designs. Aquafine TOC reduction systems can be found the world over in critical applications where meeting stringent criteria of the cGMP and full acceptance by the FDA are mandatory.

How UV and TOC Reduction Works

Aquafine uses UV light in a 185 nm wavelength (this is more powerful than the 254 nm used in UV water disinfection applications).

This energy promotes the formation of free radicals, leading to the oxidation of organics into CO_2 (carbon) and H_2O (water) molecules. TOCs are destroyed and the oxidation is complete.





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GARGAS ANSWERS!!!

We all have a WOUNDEFUL opportunity!!! Joe Gargas has volunteered to take and answer all of your "WATER" and "DISCUS" questions!

You folks all know my opinion of Joe's "WATER" & "DISCUS" knowledge . . . so take advantage of this oportunity and have at it!!

Here's Joe's email address:

joegar@tampabay.rr.com - Ask him anything you want and let him answer. We will then publish the questions in the monthly TBAS bulletin . . ."THE FILTER" . . . DON'T BE SHY!!

WHAT AN OPPORTUNITY!!!

MEMBERSHIP DUES!!!!

Membership Dues for TBAS are due on the anniversary of your sign-up date every year. Please make sure you check the "sign-in" list on the table at every meeting to check your "Dues-Date" ... Thanks!!!

USE PAYPAL ON THE TBAS WEBSITE . . . TBAS1.COM . . .!!!!!

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BlackWorms
. . . keeping and breeding

by Mike Jacobs

I have been handling and feeding blackworms to tropical fish since about 1968. I was a young kid working at a fish store while going to Purdue University and we had been selling the red tubifex worm to the hobbyist for 2-3 years . . . and then all of a sudden there were these “monsters”. The blackworm is not a black “red tubifex worm”. It is simply another type of worm that someone thought would be of some use in the hobby. Boy, talk about an understatement.

The red tubifex worm tended to spoil easily and really make a mess in the tank and the container in which they were kept. The black worms seemed not to be this tremendous mess so they were an instant success. Black worms are about twice as big as the tubifex worm but after a while you don’t seem to notice the difference and most people became less squeemish very quickly.

The discussion of the possibility of disease will be saved for a later article. Let it suffice for the moment that I have used them for some 50 years and can count on 1-2 fingers the number of fish I think I lost to these worms. So let’s find out how I treat them before I feed them to the fish.

I get the worms from the fish store in a bag . . . generally about a fist full but get whatever amount you wish. Put them in a long, low, flat container (see the picture)...and rinse the be-goobers out of them. The first day I’ll rinse them 5-6-7 times until the water coming off them is perfectly clear. I then put the container in the refrigerator and clean them the next day. I rinse them 4-5 times each time I get them out to clean them. I run the sprayer over them so that they “boil” in the stream of water. When the container is full of water I set it down until the worms all go to the bottom and then I pour the water out of the container. I do this every day for at least 4-5-6 days until the water at the first of the cleaning is as clear as the last water I rinse them in . . . it will happen. I usually have one container I am feeding from and one container I am cleaning. I have had good clean black worms last up to a month without feeding them...until I fed them all to the fish . . . they seemed perfectly clean and healthy the whole time.

Breeding: The following is a reprinted article from the South Carolina Biological Supply House

California blackworms can be cultured and easily maintained in a small aquarium or deep pan filled with 23 inches of spring water (or aged tap water). At room temperature in the laboratory, populations double in about 34 weeks or less. Using a disposable plastic pipette, transfer a few dozen, undamaged,

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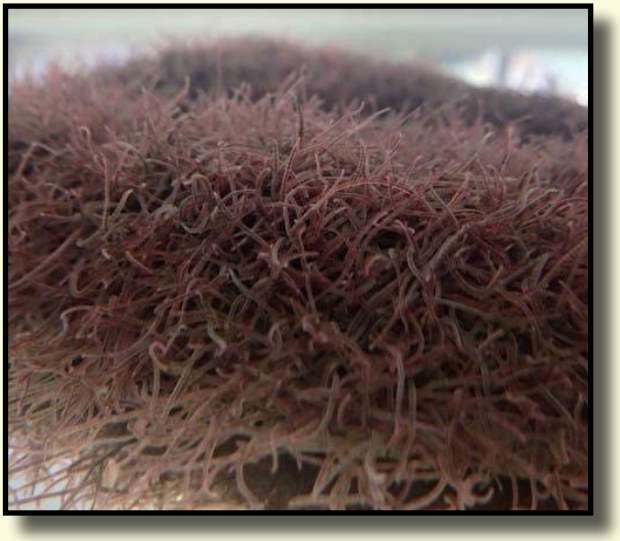
healthy worms into the aquarium. Never attempt to handle or transfer worms with forceps or hooks. They are easily injured by these instruments. Next, add enough strips of brown paper towel to just cover the bottom of the container. The towel serves as a fibrous substrate of decomposing material, both for the worms and for numerous microscopic organisms that may cohabit the culture, such as bacteria, protozoans, rotifers, and ostracods.

Add sinking fish-food pellets as the primary food source for this simple aquatic ecosystem. Start by adding one or two pellets. After a few days, add one or two more, but only if the others have been consumed. Do not overfeed, since decomposition of uneaten food may contaminate the aquarium and cause a mass die-off of worms. Worms are not harmed, however, by irregular feeding or long periods of starvation.

Replace water lost to evaporation by adding spring water (or distilled water). I recommend continuous, gentle aeration, and this becomes increasingly important as biological decomposition of the paper occurs and as the worm population increases.

As the paper towel disintegrates and waste residues accumulate, replace the culture water regularly (about every two weeks) by slowly decanting it down a drain. Be careful not to lose remaining paper and worms at the bottom. After rinsing the paper and worms again with spring water, and decanting, refill the aquarium to the original level and add new pieces of towel. I suggest the occasional “harvesting” of surplus worms; these can be used for classroom experiments, as live food for fish, or for starting duplicate cultures. I strongly advise the maintenance of at least one duplicate culture. If you follow these procedures, the worms reproduce continuously by asexual reproduction (fragmentation), and cultures may be sustained for years.



California Blackworms

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Zap!

Have you ever been zapped by an electric stingray? I WAS! I tried to force feed one when it knocked me across the room. I had mistakenly assumed that it's generated current was more like the electric Black Ghost's. I was VERY wrong. The stingray went back to the dealer the next day. My arm "bothered" me for several months after that incident.

What do you do when a fish "get" you? If it is a venomous type sting some vinegar and HOT water and Benadryl will help. The sting will give you a burning sensation and ice or cold water will make it worse. If it is an electric zap you might consider having yourself checked by a doctor. I would not recommend one of these fish to anyone with a pacemaker.

Do your homework on new fish. I have compiled a list of potentially painful groups commonly available in the hobby and their weapons. Most are marine and some are not legal in Florida.

Black and white striped catfish, marine. The pectoral fins. Many pet shops don't know that this fish is venomous. The reaction is like that of a lionfish. Get treatment right away for a sting from this fish.

Catfish in general, freshwater and marine. If you have ever stepped on a catfish while fishing then you know how painful it can be. Some catfish have venom in their dorsal and pectoral fins. Vinegar will usually help to neutralize the poison. Always use caution when handling catfish.

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Electric eel, only freshwater. This fish is not usually offered for sales and never in Florida. It can give a fatal jolt of electricity and it definitely is not for novices.

Electric stingray, marine. The name means just what is says and it can give a nasty jolt. Remember that saltwater conducts electricity better than freshwater.

Marine lionfish, all types. Venomous, usually the back fins and sometimes the side fins too. Does not hurt other fish in the tank, normally. However, the Turkey lionfish is a jumper.

Puffer fish, both freshwater and marine. These fish are poisonous if eaten. Don't eat them unless a licensed puffer chef prepares them for you. Don't put them with other fish that might eat them. Although this is not always fatal, it can be.

Scorpion, marine. Good name for this venomous fish. Usually top and side fins carry venom.

Marine surgeon fish and angels. Most surgeon fish, marine angels and loaches are armed with razors or spines. These razors fold down against the body or into a groove but can be pooped out in defense. These can cut a net and your hand. Surgeon fish will attack other surgeons with their spines.

Freshwater loaches and botias, such as the clown loach, have spines near their eyes, so be careful when handling them.

There are other fish which you should use some caution around. As a general rule of thumb, if in doubt, ask someone you trust. Always handle fish carefully, anyway, if not for your safety, then for theirs. Until next month, good fish keeping.

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DISCUS: The King of Aquarium Fish

2 MINUTES AND 40 SECONDS LONG!

20-40+ second "load" the **FIRST** time!!!

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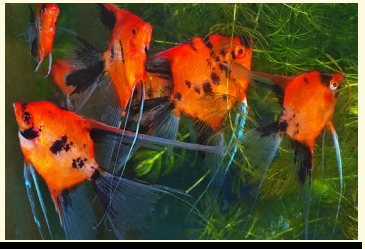

THE BEST KOI ANGELFISH IN THE UNIVERSE

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***Ancistrus cf. cirrhosus* "Albino" . . . Albino Pleco**

photo: Mike Jacobs 2020

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Supporters of TBAS

Tampa Bay Wholesalers: Tropical Fish

alphabetical order

1) 5D Tropical Fish
2) Segrest Farms

Tampa Bay Tropical Fish Farmers:

alphabetical order

1) Amazon Exotics
2) BioAquatix
3) FishEye Aquatics
4) Golden Pond
5) Imperial Tropicals
6) Lile's Tropical Fish
7) V-W Tropicals

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