

# HYDRO BIOSCIENCE®

## Eco Driven Solutions®

### a Clean New Dawn™

Offering the most advanced sonic algae remediation patented world wide-“...it is our mission to continue developing and providing effective alternatives to chemical carcinogens. I hope you'll agree with our quest and join us ...”

Antonio Trigiani  
DPI, President



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## Hydro BioScience® products DO NOT create cavitation

### Frequently asked questions

#### What is cavitation & why is it bad?

Cavitation is a phenomenon in which rapid changes in water pressure result in the formation of small vapor-filled "voids". When again subjected to higher pressure, these voids collapse and generate shock waves capable of damaging nearby equipment. If algae is growing near a cavitation void, the resulting shockwave damages the outer cell wall of the algae, releasing all of the toxins into the water. This can lead to massive fish kills and the destruction of the water ecology.

#### What happens to the waste algae?

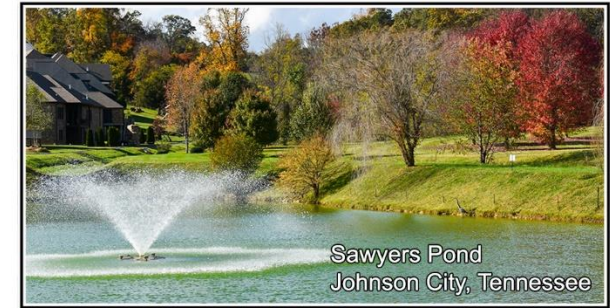
The waste algae becomes less buoyant and sinks to the bottom of the body of water. In aquifers, lakes, ponds, and other bodies of water, the waste algae gets eaten and reabsorbed by the local wildlife. In swimming pools, aquifers, and other water retention systems, the filtration systems remove the remnants.

#### What types of algae is your system effective against?

The following genome (above) and species (below) are commonly controlled by ultrasound: Anabaena, Aphanizomenon, Aphanochaete, Arcella, Botryococcus Braunii, Chlamydomonas, Chlorella, Chloromonas Botrys, Chroococcus, Coelastrum, Cosmarium, Crucigenia, Cryptomonas Erosa, Cyclotella, Dictyosphaerium, Fragilaria, Gloeocystis, Gomphonema, Lagerheima, Lyngbya, Merismopedia Tenuissima, Micractinium, Microcystis, Navicula Minima, Nitzschia, Oocystis Pusilla, Phacus, Pinnularia, Planktothrix, Pseudanabaena, Rhodomonas Minuta, Scenedesmus Acuminatus, Scenedesmus Quadricauda, Sphaerocystis Schroeteri, Spirogyra, Staurastrum, Tabellaria, Tribonema, and Ulothrix.

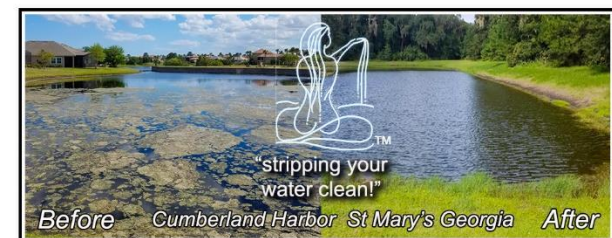
## Ultrasonic Algae and Biofilm Control Technology offers the following:

- ◆ Environmentally safe and efficient way of controlling algae and biofilm growth
- ◆ Our power supplies will operate using (120 or 240vac, 24 vac, 24 vdc, solar)
- ◆ Remote locations can use our land based or floating solar arrays
- ◆ 1000's of distinct frequencies that span multiple bandwidths
- ◆ Cable lengths up to 100's of meters are available. approx. \$20/year
- ◆ Single unit coverage per device:
- ◆ Green algae/diatoms up to 17 acres
- ◆ Environmentally safe and efficient way of controlling algae and biofilm growth
- ◆ Blue-green algae up to 120 acres
- ◆ Each power supply supports two ultrasonic units for dual operation.
- ◆ Quickly reduces pH and total suspended solids
- ◆ Improves water taste and reduces water born odors
- ◆ 360 coverage via patented four surface ultrasonic emitters.
- ◆ Lowers biofilm growth in process equipment and reduces chlorine usage, THM's and HAA's.
- ◆ Navigation lights and reflectors on pontoons systems for navigable water operations
- ◆ No anti-seize, dielectric grease, lubricants and cleaners used, conform to NSF-61 rating



## Algae and Biofilm Control for:

- ◆ Reservoirs - Coverage per Device  
Blue-green 120 acres Green algae/diatoms 17.5 acres
- ◆ Lagoons
- ◆ Irrigation Basins
- ◆ Clarifiers
- ◆ Potable Water Tanks
- ◆ Wet wells (iron and manganese bacteria)
- ◆ Sedimentation Basins
- ◆ UV Chambers
- ◆ Fresh and salt water
- ◆ Herd animal water troughs





## Our Product and How it works

Contained within the Hydro BioScience® QUATTRO-DB® QDB™ (360°) and MEZZO-DB® MDB™ (bi-directional) units are electronic circuits that generate specific frequencies, low wattage amplifiers and piezo transducers (like speakers). All interior components are “potted” or in effect, sealed completely in a water-resistant polymer. Powered by 100/220 VAC, 24 VAC/VDC or Solar power, these patented units emit over thousands of different frequencies on multiple separate bands to create an environment of critical structural resonance specifically targeted at the vesicles (air bladder) located inside the cell walls of algae. This resonance causes movement inside the vesicles, which are only a protein layer thick, resulting in their rupture. Think of the cassette tape commercial: Opera Singer / Wine Glass. The sonic head is the opera singer. The algae vesicle is the wine glass. This process quickly immobilizes the algae causing it to sink to the bottom of the water column where it decomposes and is consumed by aquatic life and naturally occurring bacteria.

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This decomposition process is greatly aided by the application of aeration and the introduction of beneficial bacteria where none, or little, exists naturally. Resonant frequencies created by these units also prevents bacteria from colonizing into biofilm as this resonant effect is similar to turbulence, an effect that bacteria naturally avoid in nature. The emitted frequencies are harmless to humans, animals, fish, plants and other aquatic life. Our devices use only a fraction of the power used in fetal imaging processes and much less power than depth finders commonly found on boats. Neither of these processes have ever been found to be detrimental to aquatic life. Because these frequencies are emitted only across the surface of the water, targeted at algae when rising to the surface to gather sunlight for the process of photosynthesis, the depth of the water area is inconsequential to the effectiveness of the unit.

Hydro  
BioScience®  
Product Line -  
Launched 2016  
Patented  
August 2019



Land based systems by Hydro BioScience® provide environmentally safe and efficient control of algae and biofilm growth. Bacterial biofilm growth is controlled by mimicking continuous water turbulence to prevent colonization. This unit is designed to work in lakes, reservoirs, waste water treatment lagoons, irrigation basins, clarifiers, sediment basins, and livestock ponds up to 120 acres per device.

- Operates on 120 VAC, 240 VAC, 24 VAC/VDC (Land-Based System)
- Operates completely independent of the power grid with included solar array (Land-Based Solar Systems)
- Pre-installed power connection options for US, European, UK, Australian, and South African plugs
- Land-Based System Kits include: Power supply, transducer, float/flag (if applicable), 30 meter transducer cable (stock, cable can be custom-ordered any length)
- Land-Based Solar Systems Kits include: Solar panels with 5 ft pole frame, transducer, float/flag (if applicable), battery box with batteries, 30 meter transducer cable (stock, cable can be custom-ordered any length) All required installation hardware



Hydro BioScience® solar pontoon systems provide the same environmentally safe and efficient algae control as our Land Based Systems with the convenience of a pontoon and a larger coverage area! The pontoon system is designed for use with lakes, reservoirs, waste water treatment lagoons, irrigation basins, clarifiers, sedimentation basins, UV chambers, and more.

### Features of the solar pontoon kits

- System comes fully-assembled
- Quickly reduces pH and percentage of total suspended solids
- Reduces the need for harsh or harmful chemicals
- Lowers biofilm growth
- Improves water taste and reduces water-borne odors
- Kit includes: solar panels with pontoon frame, transducer, solar controller, battery box with batteries, 1 meter transducer cable, all required hardware