

September 2017

## The Fish Tank Test System

By: David R. Knighton MD, Co-Founder, President and Chief Executive Officer

What's the best way to test the effect of The Moss™ on a sample of water? I've talked to many people who took some Moss samples and decided to test water to see if it really does what we claim. They've tried putting The Moss™ a glass of water and left it on the windowsill in the sun, they've put The Moss™ in a bucket of water and left it on their office floor. All these are well-intentioned attempts to see if The Moss™ works. The only problem is that their needs to be water interaction with The Moss™ leaves with flowing or moving water and to achieve this interaction. After many trials in the lab, I've found that an inexpensive 2 gallon aquarium and filter-pump system makes the perfect way to test water.

### Steps:

1. Assemble the filter-pump and discard the filter that is inside the unit.
2. Rinse off the aquarium and filter-pump with tap water or distilled water. If the ion measurement is critical use distilled water.
3. If you plan to do more than one test, I line the aquarium with a plastic bag that is discarded at the end of the test and rinse out the filter-pump.
4. For 2 gallons of water I use two of the sample squares of The Moss (approx. .4 gms). I remove them from the blue bag and cut a piece of paint strainer bag so The Moss™ has more room to expand and interact with the water.
5. The Moss™ cachet goes in the well of the filter pump.
6. Fill with test water and make sure to fill the sump of the filter pump as well.
7. I cover the top with clear wrap to prevent evaporation.

So, for a few dollars and about a half hour time, you or your customer can have a proper moss treatment apparatus.



# The Moss™ versus Enzymes

By: Vance D. Fiebelkorn, Co-Founder and Chief Scientific Officer

You are all very familiar with what The Moss™ does for your customer's swimming pools and spas. It is highly effective at reducing the overall organic contamination in pools and spas. It is especially effective on removing the organic contamination on the filtration media. This results in more easily managed pool with crystal clear water that uses less chemicals, less water, and provides a healthier pool experience.

The organic contamination in a pool or spa is the source of many problems. It can cause unstable water chemistry, cloudy water, and increased chlorine demand and chemical usage. The organic load is also the source of disinfection byproducts (DBP) in the pool. As the chlorine in the pool oxidizes the organic contamination, the chlorine is used up and combines with the organics to produce a host of chlorinated compounds (DBP). Many of these DBP are toxic and can cause itchy skin, fading swimsuits, and lung ailments.

Enzymes claim to break down the organic contaminants in pools as well. Enzymes are proteins that catalyze (accelerate) very specific chemical reactions. So while they can break down organics such as fats, oils, and proteins, they require some very specific conditions in which to work. Their action is affected by pH, ionic strength, chlorine, temperature, and the relative concentration of the enzyme and the specific contaminates they are digesting. In addition, enzymes are also specific about what organics they react with and where in the chemical structure of that organic they will react. Enzymes also work better on organics that exist in the water and have reduced ability to react with the organic contamination on surfaces, such as that found on filtration media. The organic contamination in any pool is a complex and unique mixture of the various types of contamination. This means that many different types and combinations of enzymes are needed to treat a pool, depending on the specific organic contamination present. This is why they are not always effective in a given body of water.

The Moss™ has many advantages over enzymes. First of all, The Moss™ is highly effective at removing organic contamination in ALL pools and spas, including salt-water pools. The Moss™ is very stable and is not affected by typical pool conditions. The systems used to deliver The Moss™ maintain a constant exposure of The Moss™ to the water in the pool assuring that the water is continually treated. The Moss™ is also highly effective at removing the organic contamination from the filter media. This results in superior filtration and greatly reduces the frequency of backwashing. The reduction in organic load also decreases the chlorine demand resulting in significant decreases in chemical costs and the levels of DBP in the pool water and in the air. The Moss™ has additional benefits, as it also stabilizes the water chemistry, removes positively charged metal ions that can cause staining, and reduces scaling on pool surfaces and fixtures. Only The Moss™ can give your customers easily managed pools with crystal clear water that uses less chemicals, less water, and provides a healthier pool experience.



Vance Fiebelkorn, Co-Founder and Chief Scientific Officer, has been invited to speak at the 14<sup>th</sup> Annual World Aquatic Health Conference being held in Denver from October 18-20, 2017. He will be speaking in the Advanced Chemistry session on October 19<sup>th</sup> and the title of his presentation will be "The Relationship Between Organic Load, Disinfection Byproducts and Sphagnum Moss". Vance last spoke at this conference in 2013 and is looking forward to the opportunity to present to this audience once again.

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