

Sent: Monday, March 09, 2009 2:45 PM

Subject: FORUM Q & A UPDATE #3: WHAT IS BOD & COD? & WHAT IS TOD & TOC...A BIT MORE TECHNICAL. #3 = WHAT IS DOC & POC?

Dear Aquathin Dealer OnLine;

Dissolved organic carbon (DOC) is that portion of the organic carbon (decayed vegetation makes up most) in water that passes through a 0.45 um filter (tea bag affect). For most drinking water sources, the dissolved organic carbon fraction represents a very high percentage of the total organic carbon (TOC) pool. It is composed of individual compounds as well as nonspecific humic material, although humic substances account for a large portion of dissolved organic matter in natural waters. Typically, the dissolved organic carbon level provides some indication of the amount of disinfection by-product precursors in water sources (i.e. THM's)...and that is why they should be of concern. After filtration, DOC is determined in the same manner as TOC. Organic carbon concentrations should be reported as DOC only if the sample has been filtered through the 0.45 um filter. Particulate organic carbon (POC) is that portion of the organic carbon in water that is retained on the 0.45 um filter. Some river and ground water systems, especially during storm events, may experience an increase in POC as a result of runoff.

DOC limits vary internationally from no standard to an average in the 5 mg/l range...but for drinking, we prefer zero. Remember soil is a result of composting and worms!

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Alfred J. Lipshultz
President & CEO

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From: AQUATHIN TECH SUPPORT [mailto:techsupport@aquathin.com]
Sent: Thursday, August 24, 2006 11:05 AM
To: Info@Aquathin.Com (info@aquathin.com)
Subject: FORUM Q & A UPDATE: WHAT IS BOD & COD? & WHAT IS TOD & TOC...A BIT MORE TECHNICAL

Dear Aquathin Dealer OnLine;

This is the first Forum Q & A to be loaded onto Banks without having first emailed to all Dealers because of the heavier technical content that will not be of interest or use to most Dealers. I did consider adding TOC and TOD (Total Oxygen Demand) and subsequently omitted so as not to make the Forum Q & A of BOD and COD too much of a technical snoozer. When first preparing all Dealer NewsBulletins, I choose what is and what isn't a Forum Q & A item by what a Dealer asked and then add in what % of Dealers would benefit...and then I re and re and re-edit all the Forum Q & A's and Splash NewsBulletins for hours before emailing to be certain they are entertaining in easy to understand language whilst remaining educational. Please review the TOC and TOD commentary...your comments for sending as a Forum Q & A would be appreciated.

TOD (Total Oxygen Demand) is a quantitative measure of all oxidizable material in a sample of water, as determined instrumentally by measuring the depletion of oxygen after high temperature combustion.

The world, including water chemistry is filled with far too many and confusing anacronyms. TOC (Total Organic Carbon) is not to be confused with oxygen depletion as discussed in BOD and COD. TOC is a measure of the concentration of organic carbon in water determined by oxidation of the organic matter into carbon dioxide (CO₂). Total organic carbon includes all the carbon atoms covalently bonded in organic molecules. Most of the organic carbon in drinking water supplies is dissolved organic carbon, with the remainder referred to as particulate organic carbon. In natural waters, TOC is composed primarily of nonspecific humic materials i.e. decayed vegetation. TOC is used as a surrogate measurement resource for disinfection by-product precursors i.e. THM (trihalomethane) and halo acetic acid, although only a small fraction of the organic carbon will react to form these by-products. Quantitatively, TOC is determined by removing interfering inorganic carbon, such as bicarbonate (HCO₃⁻), and oxidizing the organic carbon to carbon dioxide. Typically, the carbon dioxide is then measured with a nondispersive infrared detector.inf

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"Alfie"

Alfred J. Lipshultz, President

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From: AQUATHIN TECH SUPPORT [mailto:techsupport@aquathin.com]
Sent: Tuesday, August 22, 2006 5:48 PM
To: Info@Aquathin.Com (info@aquathin.com)
Subject: FORUM Q & A: WHAT IS BOD & COD?

Dear Aquathin Dealer OnLine'

In addition to "dissolved solids" (=TDS), water also contains dissolved gasses and the most important is O₂ = oxygen, for without it, fish and other marine life cannot breath...and its concentrations are monitored as a resource for understanding presence of pollution. BOD (Biological Oxygen Demand) is a measure of the quantity of oxygen consumed in the biochemical oxidation of organic matter in a specified time and at a specific temperature. It is determined entirely by the availability of the organic matter (anything from decayed vegetation and industrial waste water to chopped up liquefied garbage from your kitchen sink's disposal) as a biological food and by the amount of oxygen the microorganisms use during oxidation. In other words, a whole lot of organic matter in waste water severely depletes dissolved oxygen. There is a city in Pennsylvania that has outlawed residential and commercial garbage disposals and embalming processes due to the slug loading of organic matter i.e. emulsified veggies, blood and aldehydes (COD) down the drain. COD (Chemical Oxygen Demand) is a measure of the quantity of oxygen consumed by strong chemical oxidants.

There are some industrial processes that require removal of dissolved oxygen from their process water. The method requires a specific resin...and is outside Aquathin's Business Focus.

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