

## Happy New Year!

Happy New Year from your friends at WGR! Are you ready for 2010? In so many ways, I am glad that 2009 is behind us. I love fresh starts and a New Year is a great way to start anew. Some people are big into resolutions and others are still keeping their original resolution to not make any more resolutions. I am not sure what camp you fall into, but I like making goals. I really believe that without a goal in mind you have no idea where you are going and won't recognize it when you do arrive there. What goals do you have for your storm water program? Here are some ideas for 2010 resolutions to help you with your storm water compliance program:



- Read all the way through your facility's SWPPP cover to cover.
- Obtain two samples from each outfall.
- Do a more thorough job of documenting storm water inspections.
- Perform some kind of good housekeeping every week during the rainy season.
- Keep the lid closed on the garbage bin.

### The New Year "To Do List":

- January Storm Water Observations (Form 4)
- Storm Water Sampling (*You need two samples from each representative outfall; you should be at least half way done by now.*)
- Quarterly Non-Storm Water Observations between now and March 31 (Forms 2 & 3)
- Review your analytical results. Submit a letter to the appropriate RWQCB for any benchmark exceedances.





# Unlocking the Mysteries of BOD, COD, and TOC (part 1)

Many facilities are required to analyze their storm water discharges for BOD or COD. In California, Industrial General Permittees are given the option of sampling for oil & grease or total organic carbon (TOC). But, often there is confusion or misunderstandings about these tests and how to interpret the data derived from them. In this two-part series, we want to help dispel some of the mystery concerning these analyses and provide some guidance to when you should consider using them and how to interpret the results. First we will look at BOD and COD. These tests were originally developed for the sanitary wastewater industry, but are being more commonly applied to NPDES and storm water discharges.

**BOD** or biological oxygen demand (sometimes also called BOD<sub>5</sub>) is a 5-day test where the water sample is exposed to a bacteria culture. This test measures the amount of oxygen needed by the micro-organisms to biodegrade the organic compounds found in the sample. The BOD analysis will only measure oxygen available from compounds that can be degraded by the bacteria. Storm water pollutants that are typically degraded by bacteria include sugars, alcohols, ethers, organic material (paper, leaves, and green waste), sulfides, ferrous iron, and some forms of nitrogen. One of the draw backs of BOD is that it takes a long time to get results. We have often seen NPDES permittees have to release water and not be able to wait the five days for the required test. Another disadvantage is that other chemicals, which may be present and toxic to the bacteria, can cause the test to have a false low measurement. A positive aspect of the test is that it only measures oxygen demand of pollutants that would typically be oxidized in storm water runoff or a receiving water environment.

**COD** or chemical oxygen demand is a quicker-to-run test than BOD because it utilizes a chemical oxidant to measure the demand of oxygen rather than bacteria. Because the test uses a strong oxidant, such as dichromate or manganese III, all chemically oxidizable substances are measured including ones that may not typically be oxidized in storm water runoff or the receiving water environment. But, because of its quick turnaround time and that it can be performed using field test kits, COD is being specified more and more in NPDES permits.

## Ethanol

*Some of our clients have been analyzing their storm water discharges for ethanol for the past several years. Of these facilities, most are seeing ethanol concentrations in their storm water ranging from 150 to 1,100 ug/l, with the average being around 350 ug/l. Since there is no Federal or State benchmark for ethanol, it is hard to determine if these concentrations are significant and pose a threat to water quality. One way to assess a potential threat to storm water quality would be to run a BOD analysis and correlate it to the ethanol concentration. We believe a legitimate and defensible case could be made if the BOD is found to be below 30 mg/l. Of course, even if BOD is found to be within the benchmark level, the facility should still implement source reduction and pollution prevention to minimize the amount of ethanol in the discharge.*

The USEPA benchmark for BOD is 30 mg/l and the benchmark for COD is 120 mg/l. There is not much data or research available to suggest if one test has an advantage in meeting benchmarks versus the other. We do not often see both tests being required for storm water discharge samples. WGR suggests that BOD or COD be selected based on the targeted or suspected pollutants. In other words, if the only pollutant of concern is a sugar or alcohol, the most appropriate test would be BOD. In this case, we

would not be interested in other things that could potentially be oxidized by the more harsh COD analysis. However, if the pollutant of concern is something that is difficult for a bacteria to degrade, or if there are potentially other substances present which may be toxic to the test bacteria (such as heavy metals or a biocide), then COD would be a more appropriate test.

Next month, we will continue our discussion by looking at TOC; including what causes an elevated TOC measurement, when to use a TOC analysis rather than the traditional oil & grease analysis, and what can be learned by COD/TOC ratios.

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## We Have a Winner !!!

We had five responses on last month's storm water contest, which means you still have really good odds of winning a nice prize.

"Zinc is one of several potential pollutant metals; name 3 other potential metal pollutants and where they might come from."

*Tim Serpa writes:*

- Mercury (Hg): Enters the environment through the leaching of soil due to acid rain, coal burning, or industrial, household, and mining wastes.
- Lead (Pb): Sources include paint, mining wastes, incinerator ash, water from lead pipes and solder, and automobile exhaust.
- Cadmium (Cd): Sources include electroplating, mining, and plastic industries, as well as sewage.
- Arsenic (As): Enters the environment through herbicides, wood preservatives, and mining industry.

**Tim will be sent a \$25 gift card to Starbucks to warm up his January.**

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## January STORM WATER CONTEST

By **January 31**, submit a response for the following.



**True or False?** – Storm water released from impounded areas (such as a tank farm) may be subject to other Federal or State requirements. If true, name what requirements apply.

All persons submitting correct answers will be placed in a drawing. The winner will receive a \$25 gift card to **Borders** which could be used to purchase your own copy of the Code of Federal Regulations. Please submit your entries to [jteravskis@wgr-sw.com](mailto:jteravskis@wgr-sw.com).

***Please contact us if you have any questions ...***

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