



*Load. Test. Done. Simplify your lab.*



## System Builder Tool



## Products



## Advantages



## PeCOD

## What is Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)?

### Biochemical Oxygen Demand (BOD):

BOD (Biochemical Oxygen Demand), also often referred to as biological oxygen demand, is a test performed to measure the

potential of wastewater and other waters to deplete the oxygen level of receiving waters. [Click here to view the abstract for Biochemical Oxygen Demand.](#)

In other words, the BOD test is performed to determine what effect dirty water, containing bacteria and organic materials, will have on animal and plant life when released into a stream or lake. When there is an abundance of bacteria and organic materials, the bacteria will take in oxygen in order to breakdown these molecules. If bacteria are taking in large amounts of oxygen, this will have a detrimental effect on the surrounding ecosystem. On the contrary, when there are low levels of organic waste in the water, there are fewer bacteria present, the BOD will be lower and the dissolved oxygen levels higher.



In wastewater treatment plants, they often calculate the percentage removal of BOD to determine the efficiency of the treatment process. For this reason, BOD is sometimes referred to as a water contaminant.

The BOD test involves taking an initial dissolved oxygen (DO) reading and a second reading after five days of incubation at 20°C. For this reason, this test is often written as BOD5 for short. MANTECH has developed a variety of systems that have automated the analysis of BOD5 including:

PC-BOD – Available with AutoMax 73, 222 and 197 AutoSamplers the PC-BOD system is perfect for laboratories who run a medium to large amount of BOD samples. [Watch a video on frequently](#)

asked BOD questions.

PC-BOD Mini – This system is ideal for laboratories who run a small number of BOD samples.

PC-BOD/Titrate Duo – This system is for systems who do BOD and additional parameters such as pH, alkalinity, or conductivity. With a simple change of the probe and rack, turn your BOD analyser into a multi-parameter titration system. [Watch a video on this system.](#)

## Chemical Oxygen Demand (COD):

COD analysis is a measurement of the oxygen-depletion capacity of a water sample contaminated with organic waste matter. Specifically, it measures the equivalent amount of oxygen required to chemically oxidize organic compounds in water.

### Why Measure COD?

COD is used as a general indicator of water quality and is an integral part of all water quality management programs. Additionally, COD is often used to estimate BOD (Biochemical Oxygen Demand) as a strong correlation exists between COD and BOD, however COD is a much faster, more accurate test. [Watch a video on the science behind the PeCOD](#), MANTECH's new 15 minute COD analyzer.

### What are the Current COD Methods Used?

The most common COD method is the wet chemistry method. This involves a two hour digestion at high heat under acidic conditions in which potassium dichromate acts as the oxidant for any organic material present in a water sample. Silver sulfate is present as the catalyst and mercuric sulfate acts to complex out any interfering chloride. Following the digestion, the extent of oxidation is measured through indirect measurement of oxygen demand via electrons consumed in the reduction of  $\text{Cr}^{6+}$  to  $\text{Cr}^{3+}$ . This can be done by titration or spectrophotometry.

### What are the Alternatives?

MANTECH has developed an automated COD method utilizing a [new, rapid and green technology called PeCOD](#). This method directly measures the amount of oxidizable material in a sample

via photoelectrochemical oxidation in a microcell, eliminating the need for time-consuming digestion and hazardous chemicals as only an electrolyte solution is required for analysis. Automated sample homogenization always ensures a representative sample is analyzed, and multi-point calibration guarantees the best accuracy and precision.

PeCOD® - The future of COD Analys...  



## Products

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## About Mantech

MANTECH INC., is the global leader in simplifying laboratory and process operations for institutional, municipal and industrial sectors worldwide. Through its proven portfolio of automated multi-parameter, titration, Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) instrumentation solutions, MANTECH is creating value for its clients by reducing costs and increasing safety, while reducing sample analysis time. Over 1,700 MANTECH systems are in use in 45 countries.

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