

Rapid Assessment of Chemical Oxygen Demand in Water and Wastewater: A Technical Demonstration

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Traditional natural organic matter (NOM) surrogates (e.g. TOC, DOC, UV254) may not always be suitable for monitoring NOM as they do not provide information on the oxidizability, or the amount of oxygen needed for the biodegradation of NOM. On the other hand, chemical oxygen demand (COD) is a measure the amount of oxygen required to fully oxidize organic matter, but conventional COD detection methods involve the use of hazardous chemicals (i.e., mercury, hexavalent chromium, sulfuric acid, silver), and typically are not sensitive enough for measuring COD in treated drinking water. Furthermore, the use of conventional COD methods is limited in Canada due to recent regulations prohibiting the import of products containing mercury.

Recently, a commercial analyzer using a photoelectrochemical COD (peCOD) method has been developed by MANTECH Inc. PeCOD is a useful surrogate parameter for assessing NOM concentration in raw and treated drinking water as well as in wastewater, and overcomes the challenges associated with traditional COD methods through improved detection limit and reduction of hazardous wastes. Additionally, the PeCOD[®] Analyzer's ease of use and ~5-minute test time allows it to be put in the hands of plant and field operators, so they can obtain critical results quickly. The instrument provides water and wastewater operators with real time COD data to make timely, impactful treatment decisions.

This technical demonstration will include a brief overview of the peCOD technology and its applications by staff from MANTECH, followed by a hands-on demonstration using the Benchtop PeCOD[®] Analyzer (L100 model) to measure the COD of various natural, treated, and waste water matrices.