EPA Method 1640: Trace Metals in Seawater

For environmental remediation and monitoring projects that require the determination of various trace metals at ambient levels in seawater, acquiring reliable measurements can be challenging. The inherently elevated concentrations of salts can lead to severe physical and chemical interferences during analysis. Therefore, significant dilutions are required to analyze seawater samples by routine methods, which can easily result in detection limits that far exceed the concentrations of target analytes.

Developed specifically to provide reliable measurements of metals at ambient levels in seawater, EPA Method 1640 provides for a number of preconcentration techniques, combined with analysis by inductively coupled plasma-mass spectrometry, to overcome the physical and chemical interferences presented by elevated concentrations of salts and other interfering components of seawater. Consequently, ultra-low detection limits can be achieved and the most subtle differences in metals concentrations can be determined.

Example Method Detection Limits

Analyte	µg/L
Ag	0.017
As	0.034
Be	0.006
Cd	0.004
Co	0.003
Cr	0.052
Cu	0.015
Fe	0.040
Ni	0.013
Pb	0.003
Se	0.070
Tl	0.003
V	0.020
Zn	~0.05

Nationally certified per NELAP and DoD ELAP to perform EPA Method 1640, Brooks Applied Labs offers our clients a distinct level of experience performing this highly complex method. In addition to the metals specified by the method, we have further developed the technique to include many more of the analytes often targeted in seawater projects. While the method was originally developed for ambient levels of metals in seawater, it has been increasingly used for monitoring metals concentrations in estuaries, effluent mixing zones, and for wastewater discharges from desalinization plants.

The sample collection, preservation, and handling requirements for EPA Method 1640 are very specific and consultation with one of our representatives is highly recommended prior to beginning a project. To learn more about our methods and how they can assist in your environmental remediation, monitoring, or regulated discharge projects, contact us today.