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### Perchlorate Analysis by LC/MS (EPA Method 6850 & FDA Method)



Columbia Analytical Services, Inc. has the capability to perform Perchlorate analysis by Liquid Chromatography/Mass Spectrometry (LC/MS).

**Perchlorate** ( $\text{ClO}_4^-$ ) occurs in the environment when perchlorate salts of ammonium, potassium, magnesium or sodium dissolve in water. Major sources of perchlorate are solid propellants for rockets, missiles and fireworks. This pollutant is exceedingly mobile in aquifer systems. It can persist for many decades under typical groundwater and surface water conditions because of its relative stability. Perchlorate, at even extremely low concentrations, impairs normal thyroid function and may contribute to thyroid cancer. Perchlorate is among a group of unregulated chemicals requiring monitoring pursuant to Title 22, California Code of Regulations § 64450.

- Columbia Analytical performs **EPA Method 6850**, which was promulgated in January 2007. We are accredited through DoD ELAP and several states to perform perchlorate analysis. Using the LC/MS eliminates several matrix related problems encountered with EPA Method 314.0 and also provides report limits which exceed adopted regulatory standards. Because LC/MS can identify and quantitate using specific mass spectral ions from perchlorate, matrix interferences common to Method 314.0 are not encountered.
- Columbia Analytical also performs a modified version of the **US FDA Method for "Rapid Determination of Perchlorate in Foods,"** using the LC/MS. Columbia Analytical has performed this method on many various organic matrices including milk, lettuce, produce, wood, and many types of tissue samples.

#### Method Reporting Limits

- Perchlorate in water – 0.2 µg/L
- Perchlorate in soil/solids – 2.0 µg/Kg
- Perchlorate in milk – 1.6 mg/Kg
- Perchlorate in fruits and vegetables – 0.4 mg/Kg
- Perchlorate in biota – 0.6 mg/Kg