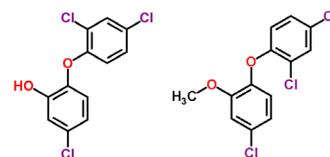




1317 South 13th Avenue • Kelso, WA 98626 • +1 360 577 7222

Determination of Endocrine Disrupting Compounds

ALS Environmental has developed methodology to determine key endocrine disrupting compounds. Triclosan [5-Chloro-2-(2,4-dichlorophenoxy)phenol] is an important antimicrobial compound used in personal care products (soap, toothpaste, deodorant, footwear); and is regulated by the U.S. EPA under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The toxicity of triclosan for aquatic organisms has motivated increased monitoring in sensitive ecosystems and the completion of a re-registration eligibility decision (RED) that includes a comprehensive risk assessment. With the established co-occurrence of additional endocrine disrupting compounds in the environment (e.g. triclocarban), further determination of triclosan concentrations in surface water may trigger more expansive chemical speciation in certain watersheds.



Chemical structure of triclosan (left) and methyl triclosan (right).

Methyl triclosan is an important transformation product of triclosan, which has been detected in fish and surface waters. It has been quantified in order to better understand the elimination and degradation pathways of triclosan in the aquatic environment. Therefore, many monitoring efforts include methyl triclosan as a target compound to better understand the potential for adverse effects.

Analytical Approach using Selected-Ion-Monitoring

ALS Environmental provides premier selectivity for sensitive detection of triclosan and methyl triclosan. Our selected-ion-monitoring (SIM) GC-MS method allows for mass confirmation of the target compounds with reduced matrix interference. Our quantitation is achieved using an internal standard method, while matrix spiking with compound surrogates prior to sample preparation improves the method accuracy by allowing evaluation of recoveries. Combined with a solid-phase extraction (SPE) sample preparation procedure, our method achieves trace level detection limits required for many environmental monitoring projects.

Compound	Method Reporting Limit (ng L ⁻¹) ^A	Matrix Spike % Recovery Limits
Triclosan	20 ^B	70-130 ^C
Methyl Triclosan	20	70-130

A: MRL is defined as ten times the method detection limit.
B: On-column mass for 5µL injection volume indicates 0.1pg MRL.
C: Surrogate compounds include Triclosan-¹³C₁₂ and Methyl-Triclosan-¹³C₁₂

Additional Endocrine Disrupting Compounds by GC-MS

ALS Environmental can provide further characterization of your samples with our established method for Bisphenol A (BPA), nonylphenols, nonylphenol ethoxylates, and octylphenol. The table below provides MRL values in both water and soil matrices. Our analytical team can optimize the method for water, wastewater effluent, soil, and sludge matrices.

Compound	Water (µg L ⁻¹)	Soil (mg Kg ⁻¹)
Bisphenol A	0.4	0.4
Nonylphenols (total)	2.0	2.0
Nonylphenols monoethoxylate	4.0	4.0
Nonylphenol diethoxylate	8.0	8.0
t-Octylphenol	0.4	0.4



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