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Trichloroacetic acid (TCA) in Urine GC-MS Analysis Kit

Chlorinated solvents are defined as carcinogenic substances by the International Agency for Research on Cancer (IARC). Trichlorethylene, tetrachloroethylene and 1,1,1-trichloroethylene undergo biological transformation by cytochrome P-450 monooxygenase or to produce trichloroethanol (TCE) and trichloroacetic acid (TCA) by alcohol dehydrogenase and aldehyde dehydrogenase. Trichlorethylene and tetrachlorethylene are widely used, especially as metal degreasers, in the dry-cleaning industry, and in the manufacture of various products such as adhesives and paint removers. In order to evaluate workers' exposure to chemicals, it is necessary to evaluate urine levels of not only the main component but also its metabolites, TCA and TCE, which have a relatively longer biological half-life.

Highlights of the Analysis Kit

- Simple sample preparation without SPE or evaporation
- Total run time is 6.25 min.
- Long life span of GC column

Parameters

Trichloroacetic acid (TCA)

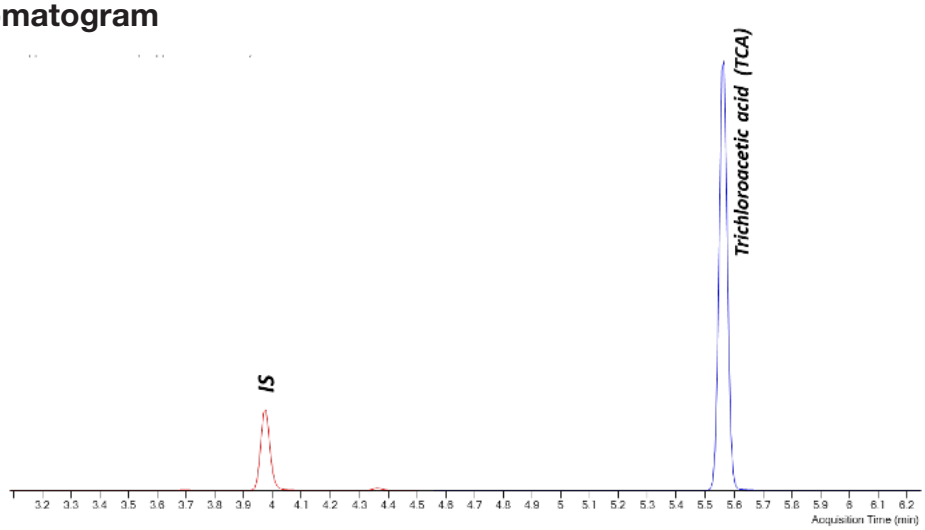
Sample Type

Urine

Sample Preparation

1	Take 200 µl urine/calibrators/controls sample into a headspace vial
2	Add 100 µl internal standard and 600 µl Reagent mix and immediately cap the headspace vial
3	Inject to GC system.

Example Chromatogram



Example chromatogram of TCA and IS

Method Performance

All results were obtained using Agilent 8890B GC 5977B MSD instrument

Analytes	LOQ (mg/L)	Linearity (mg/L)	Recovery		Repeatability			
					intra-day		inter-day	
			LLQC* (%)	HLQC** (%)	LLQC (%CV)	HLQC (%CV)	LLQC (%CV)	HLQC (%CV)
TCA	0.04	0.25 – 50.0	96	94	1.77	2.36	1.50	4.09

* LLQC: Low-level quality control
** HLQC: High-level quality control

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