Low Level Explosives Analysis

Columbia Analytical Services, Inc. provides a comprehensive approach to explosives analysis. Columbia Analytical chemists use the following technologies and procedures to enhance our low-level explosives analysis:

Solid Phase Extraction (SPE) technology allows for extremely efficient extractions, consistently achieving early 100% recoveries for all analytes. This is a marked improvement over the salting-out liquid-liquid extraction proposed in EPA Method 8330. SPE technology also allows the analyst to process samples using minimal solvent, in keeping with current waste minimization programs.

Diode Array Detector (DAD) technology allows the analyst to enhance overall data quality by performing peak purity analysis and acquisition of UV spectra for spectral confirmation.

Second Column/Detector Confirmation is required by EPA methods. Columbia Analytical employs CN column confirmation supplemented by GC/MS for confirmation of detections above the MRL.

EPA Method 8330 - Method Detection Limits (MDLs)

	Soil (mg/Kg)	Water (µg/L)	Tissue (mg/Kg)
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.07	0.5	0.05
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.2	0.4	0.08
1,3,5-Trinitrobenzene	0.09	0.4	0.05
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	0.2	0.4	0.07
1,3-Dinitrobenzene	0.09	0.3	0.06
Nitrobenzene	0.1	0.5	0.06
4-Amino-2,6-dinitrotoluene	0.1	0.5	0.05
2-Amino-2,6-dinitrotoluene	0.1	0.5	0.08
2,6-Dinitrotoluene	0.1	0.4	0.08
2,4-Dinitrotoluene	0.06	0.3	0.08
2-Nitrotoluene	0.09	0.3	0.05
4-Nitrotoluene	0.1	0.5	0.2
3-Nitrotoluene	0.08	0.3	0.1
Columbia Analytical SOP* HPLC Method Detection Limits (MDLs)			
Nitroguanidine	34	2	-
EPA Method 8330M Method Detection Limits (MDLs)			
Picramic Acid	0.3	3	-
Picric Acid	0.04	0.5	-
EPA Method 8332 Method Detection Limits (MDLs)			
Nitroglycerin	0.5	0.7	1
Pentaerythritol Tetranitrate	0.5	0.8	1

* Columbia Analytical SOP based on Analytical Methods for Determining Nitroguanidine in Soil and Water, U.S. Army Corps of Engineers CRREL, Special Report 89-35, November 1989.

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