HPLC application note

Explosives Residues in Soil

'...factory sites have been grossly contaminated with toxic chemicals...'

The increasing demand for public housing in metropolitan areas has led to the closure of a number of factories which have subsequently been re-zoned as residential sites. Unfortunately, many of these sites have been grossly contaminated with toxic chemicals *e.g.*, heavy metals and potential carcinogens. Extensive investigation of the degree of contamination of both soil and ground water and the effectiveness of the site clean-up procedures has become mandatory.

This note outlines the HPLC analysis of contaminations due to explosives residues on the site of a former explosives factory where trinitrotoluene, isomeric dinitrotoluenes and cyclonite (RDX) were manufactured. Such compounds are considered to be toxic by all exposure routes and can cause headaches, nausea, fatigue, faintness, cyanosis, shortness of breath, CNS depression and respiratory depression. Evidence from available animal tests indicates that repeated or prolonged exposure to these chemicals could result in liver, blood and reproductive system disorders. The HPLC method employs simple, isocratic elution with UV detection at 230 nm (see Figure 1).

Keywords:
TNT, DNT, RDX, Cyclonite, Soil Residues, Environmental Pollution

Analysis is rapid (8 minutes to 2,4-DNT) and highly reproducible, especially when sample injection is effected under microprocessor control via the LC1600 Autosampler.

Conditions

Column:	Spherisorb S5 ODS2, 250 x 4.6 mm ID
Guard:	Spherisorb S5 ODS2, 50 x 4.6 mm ID
Mobile Phase:	Water:MeOH:THF (26:72:2)
Temperature:	35°C
Wavelength:	230 nm
Injection Vol:	10 µl

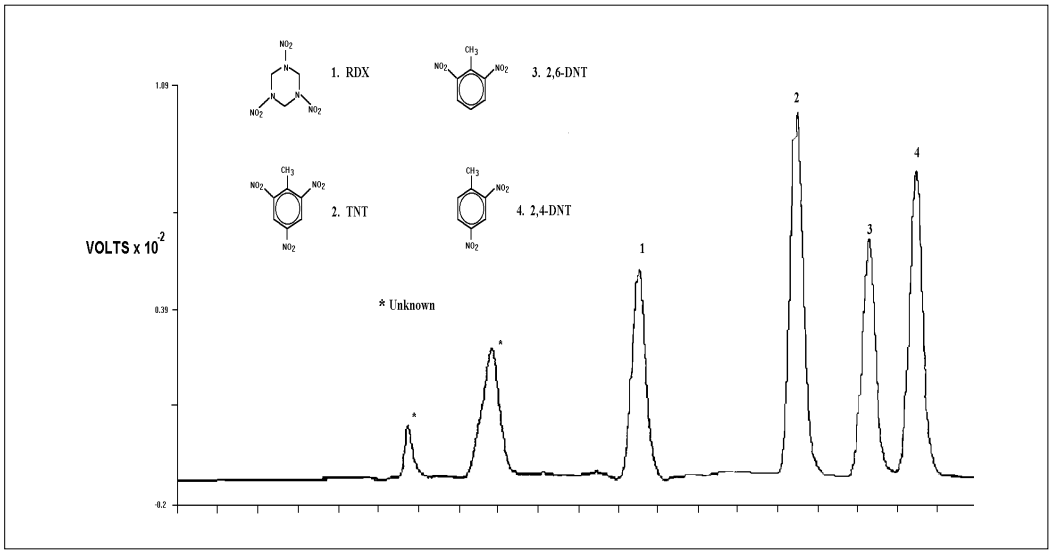

Figure 1 *Acetonitrile extract of soil spiked at 100 ng level.*

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GBC HPLC Instrumentation

LC1110 Dual Piston HPLC Pump
LC1200 Variable Wavelength UV/Vis Detector
LC1650 Advanced Autosampler
WinChrom Chromatography Data Management System

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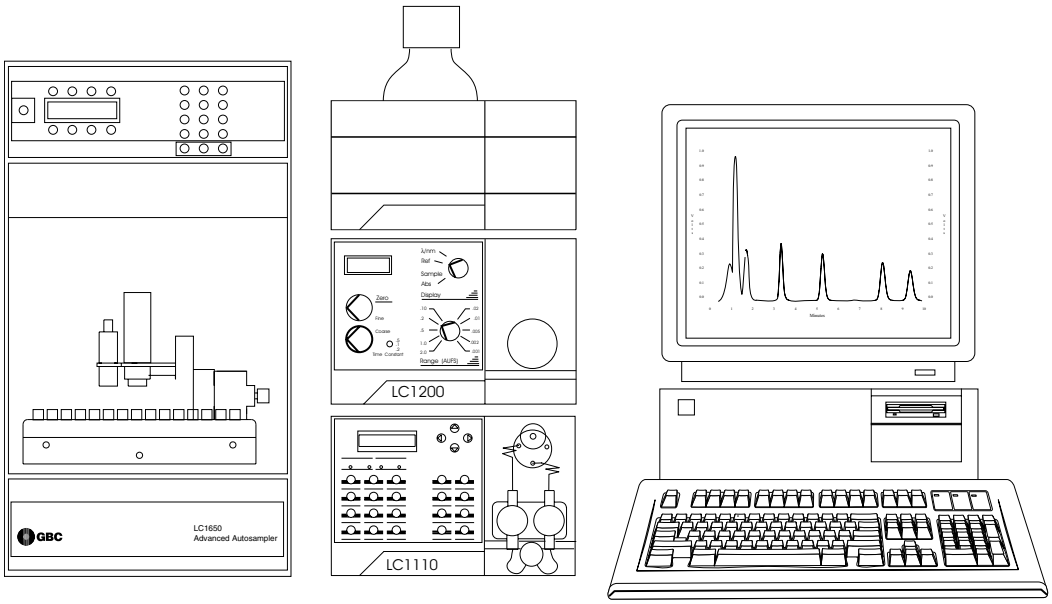

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