

MODERNWATER

RaPID Assay[®]

Carcinogenic PAH

RaPID Assay[®] is a rapid field or laboratory enzyme immunoassay method for the analysis of soil and water for remediation, assessment, and industrial testing.

Test result type

- Quantitative, semi-quantitative or qualitative

Samples per kit

- 100 test kit (tests up to 80+ samples)

Assay range

- Soil: 10 ppb to 500 ppb as Benzo(a)pyrene
- Water: 0.1 to 5.0 ppb as Benzo(a)pyrene
- Range can be extended with additional dilutions
- Site specific calibration required to meet total PAH/C-PAH analysis requirements.

Sample preparation

- Soil samples require prior extraction using the sample extraction kit (sold separately)
- The sample extraction kit provides materials for 12 soil sample extractions with methanol
- Water samples must be diluted with an equal volume of methanol to prevent adsorptive loss.

Sampling time

- Soil extraction time is typically two minutes per sample plus assay run time of approximately 60 minutes

- Rapid field testing procedure for analysis of soil and water samples
- Quantitative data results with excellent analytical precision
- Test up to 50 samples at one time
- Results available in approximately 60 minutes
- Training available
- Magnetic particle immunoassay
- EPA SW-846 method #4035 with increased sensitivity to carcinogenic PAHs



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Specificity

The total Carcinogenic PAH concentrations (sum of seven Carcinogenic PAH compounds) of the indicated contaminant types in soil samples are expressed below, at each of the three kit calibrator levels, in units comparable to results from GC method 8015 (TPH).

TOTAL CARCINOGENIC PAH RAPID ASSAY - TOTAL CARCINOGENIC PAH IN SOIL (PPB)			
Contaminant	Std. 1 equiv.	Std. 2 equiv.	Std. 3 equiv.
Cresote	0.5	10	100
Coal Tar Oil	0.5	10	100
Diesel Fuel	0.5	5	35
Fuel Oil #4, 6	1.0	7.5	35
Fuel Oil #5	0.5	5	25
Total Carcinogenic PAHs in Water			
Cresote	0.01	0.2	2.0
Coal Tar Oil	0.01	0.2	2.0
Diesel Fuel	0.01	0.1	0.7
Fuel Oil #4, 6	0.02	0.15	0.7
Fuel Oil #5	0.01	0.1	0.5

The RaPID assay Carcinogenic PAH immunoassay test does not differentiate between benzo(a)pyrene and other polyaromatic hydrocarbons. The table below shows compounds at the limit of quantitation (LOQ) - an approximate concentration required to yield a positive result at the lowest standard. The IC50 is the concentration required to inhibit one-half of the colour produced by the negative control. It is also used to calculate cross-reactivity values to similar compounds.

CARCINOGENIC PAH IN SOIL (PPB)		
Contaminant	LOQ	IC50
Benzo(a)pyrene	20	320
Benzo(a)anthracene	6.0	96
Benzo(k)fluoranthene	8.0	160
Chrysene	8.0	138
Beno(b)fluoranthene	16	260
Indeno [1,2,3-c,d]pyrene	24.6	406
Dibenzo(a,h)anthracene	30	482
Anthracene	256	44
Phenanthrene	840	13,440
Fluoranthene	856	46,600
Benzo(g,h,i)perylene	1,250	>20,000
Pyrene	2,920	46,600
Fluorene	4,280	68,400
Naphthalene	61,500	1,000,000
Acenaphthylene	72,200	1,154,000
Acenaphthalene	>125,000	>2,000,000

Test kit components

- Antibody coated magnetic particles, enzyme conjugate, colour development and stop and wash solutions for analysis of 100 test tubes
- Standards for 0.1, 1.0 and 5.0 ppb as Benzo(a) pyrene
- Kit control as 2.0 ppb as Benzo(a)pyrene
- Disposable test tubes
- Test kit instructions

Storage & precautions

- Shelf life is typically one year from date of manufacture, with specific kit expiration date information provided on product packaging
- Reagents must be stored at 39° to 46°F (4° to 8°C) when not in use
- Store at ambient temperature 64° to 81°F (18° to 27°C) is acceptable for day of use
- Kits must be brought to 64° to 81°F (18° to 27°C) before use
- Do not expose colour solution to direct sunlight

Required test materials

- | | |
|---|----------|
| • CPAH 100 tube kit | A00205 |
| • Sample extraction kit (for soil samples only) | A00204EA |
| • cPAH sample diluent (100 mL) | A00203 |

Required test equipment

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|--|-------------|
| • RaPID Assay accessory kit which contains | 6050100 (p) |
| | 6997010 (r) |
| • RPA11 analyser | 6000081 |
| • Printer | 6000082 |
| • Magnetic separation rack | A00004 |
| • Repeater pipet | A00008 |
| • Adjustable volume pipet | A00176 |
| • Vortex mixer | A00014 |
| • Portable balance | A00131 |
| • Digital timer | A00015 |
| • Repeater pipet tips (12.5 mL) | A00009 |
| • Adjustable pipet tips | A00013 |

Other recommended materials

- Latex gloves
- Liquid and solid waste containers
- Calculator
- Absorbant paper for blotting
- Marking pen

p = purchase, r = rental