MODERNWATER | RaPID Assay®

Pentachlorophenol (PCP)

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: 0.1 ppm to 10 ppm as pentachlorophenol
- Water: 0.1 to 10.0 ppb as pentachlorophenol
- Other applications are also available
- Range can be extended with additional dilutions

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 alkaline methanol.

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
- Tests up to 50 samples at once
- Results available in approximately 60 minutes
- Magnetic particle immunoassay
- Training available
- EPA SW-846 method #4010

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Specificity

The PCP RaPID Assay® immunoassay test does not differentiate between PCP and other organochlorines. 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.

PCP IN SOIL (PPM)

Contaminant	LOQ	IC50
Pentachlorophenol	0.1	2.2
2,3,5,6-Tetrachlorophenol	0.84	4.06
2,3,4,6-Tetrachlorophenol	0.66	14.6
2,3,5-Trichlorophenol	5.4	119
2,3,6-Trichlorophenol	2.86	62.9
Tetrachlorohydroquinone	6.7	148
2,4,6-Trichlorophenol	21.0	463
2,4,5-Trichlorophenol	26.1	574
2,3,4-Trichlorophenol	78.6	1730
2,5-Dichlorophenol	356	7830
2,6-Dichlorophenol	272.3	5990
2,3-Dichlorophenol	>611	>10,000
2,4-Dichlorophenol	>887	>10,000
3,5-Dichlorophenol	>1670	>10,000
Hexachlorobenzene	>1560	>10,000
Hexachlorocyclohexane	>5790	>10,000

Basic Test Procedure

- Add prepared sample, enzyme conjugate, and antibody coupled magnetic particles. Vortex
- Incubate for 30 minutes
- Separate using the RaPID magnetic separator. decant and wash
- Add colour solution and incubate for 20 minutes
- Stop the reaction and read colour at 450 nm
- Quantitive results and QC parameters are calculated and printed automatically using the RPA-II spectrophotometer

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Test kit components

- Antibody coated magnetic particles for analysis of 100 test tubes
- Zero standard, wash, enzyme conjugate, colour development and stop reagents
- Standards for 0.1, 2 and 10 ppb as PCP
- Kit control as 1.0 ppb as PCP
- 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) for up to eight hours
- Kits must be brought to 64° to 81°F (18° to 27°C) before use
- Do not expose colour solution to direct sunlight
- Portable spectrophotometer battery should be charged prior to use

Required test materials

	Part #
• PCP 100 tube test kit	A00111
• Sample extraction kit	A00128EA
• PCP sample diluent (as needed)	A00113

Required test equipment

• RaPID Assay accessory kit which contains	6050100 (p) 6997010 (r)
RPA-II RaPID analyser	6000111
Magnetic separation rack	A00004
Repeator pipet	A00008
Adjustable volume pipet	A00176
Vortex mixer	A00014
Portable balance	A00131
Digital timer	A00015
• Repeator pipet tips	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