

Immunoassay (Based on SW-846 Draft Method 4500)

Analyte	Media	Detection Limit ¹ (mg/Kg)	Samples per Day	Interferences ² (ppm)	Performance Tips and Limitations
Mercury	Soil, and other solid matrices	0.5 (Approximate)	Up to 60 ³	As > 55,000, Ba > 100,000, Cd > 82,000, Cr > 38,000, Cu > 47,000, Au > 144,000, Fe > 41,000, Pb > 150,000, Ni > 43,000, Ag > 79,000, Na > 17,000, Sr > 64,000, Tl > 150,000, Zn > 48,000	<p>This is a spectrophotometric screening method used primarily to determine if the concentration of mercury is above or below a predesignated level. It cannot be used to provide an exact concentration number, but if two standards are used, immunoassay may be used to determine the concentration range of a sample (e.g., <5.0, 5 - 20, or >20 mg/kg).</p> <p>This method requires an extraction step, using dilute acid. Soils containing oil, limestone or other carbonate rich minerals may present some problems during extraction.³</p> <p>Temperatures less than 50° F and greater than 98° F may have adverse impacts on the rate of the immunoassay reaction.³</p>

¹ According to SW-846 Draft Method 4500.

² Consult the information provided by the kit manufacturer for other potential interferences.

³ California Military Environmental Coordination Committee (CMECC), 1996.

Immunoassay for Organic Compounds					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Alachlor	Water	0.05 ppb	Soil samples generally require an extraction step. Difficult matrices such as clays will reduce the number of samples that can be processed in a day by a single analyst working 8 hours. 35-200 per day depending upon matrix ¹ .	Other similar compounds such as: For RaPID Assay®: Alachlor ESA, Butachlor, Metolachlor. For EnviroGard®: Alachlor ESA, Acetochlor, Metolachlor, Metalaxyl, 2-[(2,6-diethyl-phenyl)(methoxymethyl)amino]-2-oxoethane sulfonic acid.	Two kits are currently available, both are colorimetric and require a spectrophotometer. The RaPID Assay® method also requires a vortex mixer and a magnetic rack. If the Alachlor concentration of a sample exceeds 5 ppb, the sample is subject to repeat testing using a diluted sample. Store all reagents at 2 to 8°C. Kits must be brought to 18° to 27°C before use. Reagents should not be exposed to temperatures under 0°C or over 39°C.
Aldicarb	Water	RaPID Assay®: 0.25 ppb Enviro-Gard®: 2.0 ppb		Other similar compounds such as: For RaPID Assay®: Aldicarb Sulfone, Aldicarb Sulfoxide, Methomyl, Iron at greater than 250 mg/l	RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack. If the Aldicarb concentration of a sample exceeds 100 ppb, the sample is subject to repeat testing using a diluted sample.

Immunoassay for Organic Compounds (Continued)

Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Aldicarb (Continued)				For EnviroGard®: Aldicarb Sulfone, Aldicarb Sulfoxide	<p>Envirogard®: The method is qualitative/semi-quantitative (yes/no) at pre-specified concentrations (5 and 100 ppb). If a spectrophotometer is used, a semi-quantative concentration can be calculated.</p> <p>For both kits: Store all reagents at 2-8°C. Reagents must be brought to 18° to 27°C before use. Reagents should not be exposed to temperatures under 0°C or over 39° C.</p>
Benomyl/ Carbendazim	Water	0.1-0.2 ppb		<p>Other similar compounds such as:</p> <p>For EnviroGard®: Thiabendazole</p>	<p>EnviroGard®: Requires a microtiter plate reader (type of spectrophotometer).</p> <p>Is marketed to detect: Methyl 2-benzimidzole carbamate (MBC/Carbendazim), Benomyl, and Thiophanate.</p> <p>Plate kit components can not be stored for more than 8 hours at ambient temperature without damage.</p> <p>RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p>

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
				For RaPID Assay® 2-Benzimidazolylurea, Thiabendazole, Thiophanat-methyl, 2-Aminobenzimidazole	If the carbendazim concentration of a sample exceeds 5 ppb, the sample is subject to repeat testing using a diluted sample. Both kits must be brought to 18° to 27°C before use. Both require reagents to be stored at 4° to 8°C when not in use.
Captan	Water	0.01 ppm		Other similar compounds such as: Captafol, Folpet, Tetrahydrophthalimide, Phthalimide, Metolachlor, Propachlor, Carbaryl, Alachlor	Requires a spectrophotometer, vortex mixer, and a magnetic rack. Store all reagents at 2-8°C. Do not allow reagents to freeze.
Carbaryl	Water	0.25 ppb		Nickel was found to have no significant effect up to 100 ppm, magnesium up to 200 ppm, and humic acids up to 50 ppm. In addition, silicates and sulfate up to 1,000 ppm	Requires a spectrophotometer, vortex mixer, and a magnetic rack. If the Carbaryl concentration of a sample exceeds 5.0 ppb, the sample is subject to repeat testing using a diluted sample. Store all reagents at 2-8°C. Do not allow reagents to freeze.

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Carbaryl (Continued)				<p>and up to 500 pm manganese, mercury and zinc showed no effect on results.</p> <p>Other similar compounds such as: Carbofuran, Bendiocarb, Pentachlorophenol, Iprodione, Dichlorophenol MCPA, 2,4-D</p>	
Carbofuran	Water	0.056 ppb		<p>Other similar compounds such as: 3-Keto-carbofuran, 3-Hydroxy-carbofuran, 3-Keto-carbofuran phenol, Carbofuran phenol, 3-Hydroxy-carbofuran phenol, S-ethyl dipropylcarbamoithioate (EPTC), carbaryl</p>	<p>Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the Carbofuran concentration of a sample exceeds 5 ppb, the sample is subject to repeat testing using a diluted sample.</p> <p>Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.</p>

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Chlordane (Method 4041)	Soil	0.0064 mg/kg		Other similar compounds such as: Endrin, Endosulfan I, Endosulfan II, Dieldrin, Heptachlor, Aldrin, Toxaphene, and gamma-BHC (Lindane).	<p>This test (Envirogard®) is qualitative/semi-quantitative (yes/no) at prespecified concentrations.</p> <p>The method requires an extraction step. The results are read by spectrophotometer.</p> <p>Components must be stored at 4° to 8°C when not in use. Kits must be brought to 18° to 27°C before use.</p> <p>Kit action levels are at 20, 100, and 600 ppb.</p>
Chlorothalonil	Water	0.070 ppb		Other similar compounds such as: 2,4,5,6-Tetrachloro 3-cyanobenzamide, 2,5,6-Trichloro-4-hydroxy isophthalonitrile, 3-Carbamyl-2,4,5 trichlorobenzoic acid, Pentachloronitrobenzene, Hexachlorobenzene.	<p>Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the chlorothalonil concentration of a sample exceeds 5 ppb, the sample is subject to repeat testing using a diluted sample.</p> <p>Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use.</p>
Chlorpyrifos	Water	Enviro-Gard®: 0.050 ppb RaPID Assay®: 0.100 ppb		Enviro-Gard®: Other similar compounds such as: Diazinon, Fenchlorfos, Bromophos-methyl, Bromophos, Azinphos, Picloram, Fenitrothion, Parathion-methyl, Azinphos-methyl, 3,5,6-Trichloro-2-pyridinol	<p>Enviro-Gard®: Microtiter plate reader.</p> <p>RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the chlorpyrifos concentration of a sample exceeds 3 ppb, the sample is subject to repeat testing using a diluted sample.</p>

Immunoassay for Organic Compounds (Continued)

Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Chlorpyrifos (Continued)				<p>RaPID Assay®: Humic acid to 25 ppm, and mercury, manganese and iron to 100 ppm had no effect in the assay. Concentrations above these levels may affect the test's accuracy.</p> <p>Other similar compounds such as: Diazinon, Chlorpyrifos-methyl, Pirimiphos-ethyl, Terbufos, Pirimiphos-methyl, Disulfoton, Fenitrothion</p>	<p>For both kits: Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.</p>
Cyanazine	Water	0.14 ppb		<p>Enviro-Gard®: Other similar compounds such as: Cyanazine Acid, Cyanazine Amide, De-ethylated Cyanazine G-Hydroxy Cyanazine Acid, Ametryn, Atrazine, De-ethylated Atrazine, Di-dealkylated Atrazine, 6-Hydroxy Atrazine, Prometryn, Prometon, Propazine, Simetryn, Simazine, Terbutylazine, Terbutryn.</p> <p>RaPID Assay®: The presence of the following substances up to 250 ppm were found to have no significant effect on Cyanazine RaPID Assay results: copper, nickel, sulfate, sulfite, sulfide, magnesium, calcium, nitrate, iron, humic acid and thiosulfate.</p>	<p>Enviro-Gard®: Microtiter plate reader.</p> <p>RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the cyanazine concentration of a sample exceeds 3 ppb, the sample is subject to repeat testing using a diluted sample.</p> <p>For both kits: Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.</p>

Immunoassay for Organic Compounds (Continued)

Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Cyanazine (Continued)				Other related compounds that are potential interferents include: Terbutylazine, Terbutryn, Ametryn, Prometryn, Simazine, Propazine, Prometon, Atrazine, Desethylatrazine	
Cyclodienes	Water	Enviro-Gard®: 0.6 ppb as Endosulfan otherwise see kit for details. RaPID Assay®: 0.6 ppb		None given.	Enviro-Gard®: Microtiter plate reader. RaPID Assay®: Requires a spectrophotometer. For both kits: Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.
Diazinon	Water	0.022 ppb		Other similar compounds such as: Diazoxon, Pirimiphos-ethyl, Pirimiphos-methyl.	Enviro-Gard®: Microtiter plate reader. Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.
Dichloro-diphenyl-trichloroethane (DDT) (Method 4042)	Soil	0.044 ppm		Other similar chlorinated compounds such as: p,p'-DDD, p,p'-DDE, o,p'-DDT, o,p'-DDD, o,p'-DDE, DDA, Chloropropylate, Chlorobenzilate, Dicofol, Tetradifon.	This test (Envirogard®) is qualitative/semi-quantitative (yes/no) at prespecified concentrations. The test requires an extraction step. The results are read by spectrophotometer. Components must be stored at 4° to 8°C when not in use. Kits must be brought to 18° to 27°C before use. Kit action levels are at 0.2, 1, 10 ppm..

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
2, 4-Dichlorophenoxy-acetic Acid (2,4-D) (Method 4015)	Soil	0.16 ppm		Other similar compounds such as: 2,4-D acids and esters, and the other chemicals listed for the 2,4-D water test can interfere at higher concentrations. See test kit for specific numbers.	These tests (2,4-D RaPID Assay®) are colorimetric and require a spectrophotometer. This method requires an extraction step. If the 2,4-D concentration of a sample exceeds 50 ppb, the sample is subject to repeat testing using a diluted sample. The method also requires a vortex mixer and a magnetic rack. Reagents may require refrigeration.
2, 4-Dichlorophenoxy-acetic Acid (2,4-D)	Water	0.002 mg/L		Other similar compounds such as: 2,4-D acids and esters; 2,4-Dichlorophenol, 2,4,5-Trichlorophenoxy-acetic acid, Silvex, Dichloroprop, 2-Methyl-4-chlorophenoxyacetic acid, Mecoprop, Diflopop	This test (Envirogard®) is qualitative (yes/no) at prespecified concentrations. The results can be read visually or by spectrophotometer. Temperature extremes (less than 0° and greater than 37° C) should be avoided.
Endosulfan	Water	0.08 ppb		Other similar compounds such as: Endosulfan Alcohol, Endosulfan Sulfate, Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Lindane, Methoxychlor, Toxaphene	Enviro-Gard®: Microtiter plate reader. Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze. Temperature extremes (less than 0° and greater than 37°C) should be avoided.

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Endothall	Water	3.0 ppb		Other similar compounds such as: Endothall Acid, Endothall amine (Hydrothol 191), Endothall monomethyl ester .	RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack. If the Endothall concentration of a sample exceeds 150 ppb, the sample is subject to repeat testing using a diluted sample. Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.
Fluridone	Water	0.02 ppb		Other similar compounds such as: 1-Methyl-3-(4-hydroxyphenyl) -5-[3(trifluoromethyl)phenyl]-4- (1H)-pyridinone, 1,4-Dihydro-1-methyl-4-oxo-5-[3-(trifluoromethyl)phenyl]-3-pyridine-carboxylic acid, Des-phenyl fluridone	RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack. If the Fluridone concentration of a sample exceeds 2.0 ppb, the sample is subject to repeat testing using a diluted sample. Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (Method 4051)	Soil	0.8 ²		Nitrates, Nitrites, and to a lesser extent other nitro-explosives and their degradation products.	The method requires an extraction step and a spectrophotometer for interpretation. Operate between 4° and 39°C.
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	Water	0.004 mg/L		Nitrates, Nitrites and to a lesser extent other nitro-explosives and their degradation products.	Requires a spectrophotometer for analysis. For low level detection, the method should be performed in a closed clean area. The method is very sensitive to operator error.

Immunoassay for Organic Compounds (Continued)

Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Isoproturon	Water	0.02 ppb		Other similar compounds such as: Chlorbromuron, Chlorotoluron, Chloroxuron, Diuron, Fenuron, Fluometuron, Linuron, Metobromuron, Metoxuron, Monolinuron, Monuron, Neburon, Siduron, 4- Isopropylaniline.	Enviro-Gard®: Microtiter plate reader. Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze. Temperature extremes (less than 0° and greater than 37° C) should be avoided.
Lindane	Soil	0.4 ppm		Other similar compounds such as: Toxaphene, Endrin, Endosulfan, Endosulfan II, Dieldrin, Heptachlor, Aldrin, Chlordane.	This test (Envirogard®) is qualitative/semi-quantitative (yes/no) at prespecified concentrations. The test requires an extraction step. The results are read by spectrophotometer. Components must be stored at 4° to 8°C when not in use. Kits must be brought to 18° to 27°C before use. Substrate cannot be exposed to direct sunlight. Kit action levels are at 0.4, 4, 40 ppm.
Metolachlor	Water	Enviro-Gard®: 0.07 ppb RaPID Assay®: 0.05 ppb		Enviro-Gard®: Other similar compounds such as: Acetochlor, Alachlor, Butachlor, Dimethenamid, Metalaxyl, Propachlor. RaPID Assay®: Other similar compounds such as: Acetochlor, Metalaxyl, Butachlor, Propachlor.	Enviro-Gard®: Microtiter plate reader. Do not expose substrate to direct sunlight. RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack. If the Metolachlor concentration of a sample exceeds 5 ppb, the sample is subject to repeat testing using a diluted sample.

Immunoassay for Organic Compounds (Continued)

Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Metolachlor (Continued)				The presence of the following substances up to 250 ppm were found to have no significant effect on results: copper, nickel, sulfate, sulfite, sulfide, iron, magnesium, calcium, nitrate, and thiosulfate, and humic acid to 50 ppm.	For both kits: Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze. Temperature extremes (less than 0° and greater than 37° C) should be avoided.
Paraquat	Water	0.02 ppb		Other similar compounds such as: Methylbipyridyl methyl sulphonium salt, Diethyl paraquat, Monoquat, Morphamquat, Diquat, 4,4-Bipyridyl	RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack. Samples should be collected in a polyethylene container not a glass container. If the Paraquat concentration of a sample exceeds 500 ppt, the sample is subject to repeat testing using an increased sample dilution in the Diluent/Zero Standard or Sample Diluent. Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.
Parathion	Water	0.03 ppb		Other similar compounds such as: Parathion-ethyl, Dicapthon, Fenitrothion, Methyl-paraoxon, Paraoxon, 4-Nitrophenol Bromophos-methyl, Dichlofenthion, Fenthion.	Enviro-Gard®: Microtiter plate reader. Do not expose substrate to direct sunlight. Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze. Temperature extremes (less than 0° and greater than 37° C) should be avoided.

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Pentachlorophenol (Method 4010A)	Soil	0.5 mg/kg (kit specific)		The following chemicals will cause interferences only at elevated concentrations. See specific kits for exact numbers. 2,5-Dichlorophenol, 2,6-Dichlorophenol, 2,3,4-Trichlorophenol, 2,3,5-Trichlorophenol, 2,3,6-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4,5-Trichlorophenol	These tests are colorimetric and require a spectrophotometer. This method requires an extraction step. Water content up to 30 percent shows no effect on analysis performance. Reagents may require refrigeration.
Pentachlorophenol (Method 4010A)	Water	0.005 mg/L (kit specific)		Other similar compounds such as: 2,3,5,6-Tetrachlorophenol, 2,3,5-Trichlorophenol, 2,3,6-Trichlorophenol, Tetrachlorohydroquinone, 2,4,6-Trichlorophenol, 2,4,5-Trichlorophenol, 2,3,4-Trichlorophenol, 2,5-Dichlorophenol, 2,6-Dichlorophenol	These tests are colorimetric and require a spectrophotometer. One test kit also requires a vortex mixer and a magnetic rack. Reagents may require refrigeration.
				See specific kits for concentration these chemicals will become a problem.	

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Petroleum Hydrocarbons (Method 4030)	Soil	5 ppm		The method detects hydrocarbon based compounds to varying degrees. For example, it will give a positive response to hexachlorobenzene (<30 ppm).	<p>This test (Envirogard®) is qualitative/semi-quantitative (yes/no) at prespecified concentrations.</p> <p>The test requires an extraction step. The results are read by spectrophotometer.</p> <p>Components must be stored at 4° to 8°C when not in use. Kits must be brought to 18° to 27°C before use.</p> <p>Kit action levels are at 5, 25, and 125 ppm or 25, 125 & 625 ppm as home heating oil. To avoid false positive and false negatives, the standard should be made up with the petroleum product of interest.</p> <p>Method 4030 recommends that extractants be stored in a cool dark area until analyzed.</p> <p>The method is most sensitive to small aromatic compounds.</p>
Picloram	Water	0.87 ppb		None given.	<p>RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the Picloram concentration of a sample exceeds 20 ppb, the sample is subject to repeat testing using a diluted sample.</p> <p>Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.</p>

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Polyaromatic Hydrocarbons (Method 4035)	Soil	0.2 to 1 ppm kit specific		Similarly structured compounds may cause interference.	<p>There are several kits on the market. Before choosing one, compare the compounds they are sensitive to, with your compounds of interest.</p> <p>Extraction steps are required.</p> <p>All tests are colorimetric and require a spectrophotometer.</p> <p>The RaPid Assay also requires a vortex stirrer and a magnetic separation rack.</p> <p>All kits require ambient temperature (between 18° and 27° C) to function properly as the reaction is temperature dependent.</p> <p>This test is not an easy one to perform.</p>
Polychlorinated Biphenyls (Method 4020)	Soil	0.25-1.0 ppm kit specific		<p>Potential interferents such as:</p> <p>1,2 - Dichlorobenzene, 1,3 - Dichlorobenzene, 1,4 - Dichlorobenzene, 1,2,4 -Trichlorobenzene, 2,4 - Dichlorophenol, 2,5 - Dichlorophenol, 2,4,5 -Trichlorophenol, 2,4,6 - Trichlorophenol.</p> <p>Biphenyl, and PCP have less than a 0.5% reactivity.</p>	<p>This test is qualitative/semi-quantitative (yes/no) at prespecified concentrations (usually 5, 10, or 50 mg/kg). The results are determined by a spectrophotometer.</p> <p>Measures total PCBs with each congener having a different reactivity. The test kits are generally far more sensitive to highly chlorinated compounds than compounds with fewer chlorine substitutions.</p> <p>Reagents must be at ambient (18-27° C) temperature to work.</p>

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Polychlorinated Biphenyls (Method 4020)	Non-aqueous liquid waste	5.0 mg/L but has different detection levels for each Aroclor. Check test kit for specific number.		Water ²	<p>This test (EnSys®) is qualitative (yes/no) at prespecified concentrations. It employs a thin layer chromatography strip as a separation step.</p> <p>Requires a vortex for mixing purposes and a photometer.</p> <p>Humidity above 50% may cause reactant drying problems.</p>
Silvex	Soil	Envirogard®: 0.02 ppm RaPID Assay®: 0.014 ppm		Envirogard® Other similar compounds such as: 2,4-D, 2,4,5-T, 2,4-D methyl ester, 2,4-D isopropyl ester, 2,4-D butyl ester, 2,4-D butyric acid, 2,4-Dichlophenol, Dichlorprop, Lindane, Toxaphene, TNT, MCPA, Mecoprop, 1,2 Dichlorobenzene, 1,2,4 Trichlorobenzene, Pentachlorobenzene, PCB Aroclor 1248. RaPID Assay®: The presence of the following substances up to 250 ppm were found to have no significant effect on assay results: calcium,	<p>This test (Envirogard®) is qualitative/semi-quantitative (yes/no) at prespecified (0.05, 0.25, and 1.50 ppm) concentrations.</p> <p>The test requires an extraction step. The results determined by differential photometer.</p> <p>Do not expose substrate to direct sunlight. Temperature extremes (less than 0° and greater than 37° C) should be avoided.</p> <p>RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the Silvex concentration of a sample exceeds 250 ppb, the sample is subject to repeat testing using a diluted sample.</p> <p>For both kits: Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.</p>

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Silvex (Continued)				<p>magnesium, mercury, nitrate, phosphate, silicates, sulfite and thiosulfate. Also copper, nickel, peroxide and zinc to 100 ppm, showed no significant effect on results.</p> <p>Other similar compounds such as: Silvex Isooctyl Ester, Silvex Methyl Ester, 2,4,5-T, Triclopyr, Chlorpyrifos-methyl, Picloram, Chlorpyrifos, Pentachlorophenol, 2,4-D, Dichlorprop, Trichloro-2-pyridinol.</p>	
Simazine	Water	0.03 ppb		<p>The presence of the following substances up to 250 ppm were found to have no significant effect on assay results: calcium, copper, manganese, mercury, nickel, nitrate, peroxide, phosphate, silicates, sulfite, thiosulfate and zinc. Also, iron and magnesium to 100 ppm showed no significant effect on results.</p>	<p>RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the Simazine concentration of a sample exceeds 3.0 ppb, the sample is subject to repeat testing using a diluted sample.</p> <p>Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.</p>

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Simazine (Continued)				Other similar compounds such as: Atrazine, Terbutylazine, Propazine, Desisopropyl-atrazine, Cyanazine, Desethylatrazine, Prometon, Prometryn, Terbutryn, Ametryn, Hydroxyatrazine, Didealkylatrazine, Carbendazim, Benomyl.	
Spinosad	Water	0.02 ng/mL		<p>The presence of the following substances up to 500 ppm were found to have no significant effect on Assay results: copper, nickel, thiosulfate, sulfite, magnesium, calcium, mercury, manganese and phosphate. Humic acid concentrations up to 50 ppm and nitrate, iron, zinc, and peroxide up to 100 ppm were found to have no significant effect.</p> <p>Other similar compounds such as: β-Lactose, Alachlor, Chlorothalonil, N- Acetyl-glucosamine, Methyl Oleate, Triclopyr, Parathion Methyl.</p>	<p>RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack.</p> <p>If the Spinosad concentration of a sample exceeds 1 ng/mL, the sample is subject to repeat testing using a diluted sample.</p> <p>Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.</p>

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Thiabendazole	Water	0.2 ppb		Other similar compounds such as: 5-OH-Thiabendazole, Fuberidazole, Cambendazole, Albendazole, Benomyl, Fenbendazole, Mebendazole, Methyl benzimidazolecarbamate (MBC), Thiophanate, Thiophanate-methyl.	Envirogard®: Microtiter plate reader. Do not expose substrate to direct sunlight. Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze. Temperature extremes (less than 0° and greater than 37° C) should be avoided.
Total Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)	Water	0.1 ppm		While the method is calibrated to a BTEX standard, it is sensitive to other dissolved petroleum hydrocarbons and hence can be prone to false positives.	This test (Envirogard®) is qualitative/semi-quantitative (yes/no) at prespecified concentrations. The results are read by differential photometer. Components must be stored at 4° to 8°C when not in use. Kits must be brought to 18° to 27°C before use. Kit action levels are at 0.1, 0.5, and 3 ppm, as BTEX. The method is most sensitive to small aromatic compounds.
Toxaphene (Method 4040)	Soil	0.5 mg/kg		Other similar compounds such as: Endrin, Endosulfan I, Endosulfan II, Dieldrin, Heptachlor, Aldrin, Chlordane, and Lindane.	This test (Envirogard®) is qualitative/semi-quantitative (yes/no) at prespecified concentrations. The test requires an extraction step. The results are read by spectrophotometer. Components must be stored at 4° to 8°C when not in use. Kits must be brought to 18° to 27°C before use. Kit action levels are at 0.5, 2, and 10 ppm.

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Triasulfuron	Water	0.04 ppb		Other similar compounds such as: Chlorsulfuron, Chlorimuron-Ethyl, Metsulfuron-Methyl, Bensulfuron-Methyl, Primisulfuron, Thifensulfuron, Rimsulfuron, Nicosulfuron, Sulfometuron-Methyl.	Envirogard®: Microtiter plate reader. Store all reagents at 2 to 8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze. Temperature extremes (less than 0° and greater than 37° C) should be avoided.
Triazine Herbicides (Draft Method 4670)	Water	0.00003 mg/L		The method gives total triazine compound concentration and is not specific to just atrazine. See specific test kit for relative sensitivities.	These tests are colorimetric and require a spectrophotometer. The method also requires a vortex mixer and a magnetic rack. Reagents may require refrigeration. Sample pH may require adjustment.
Trichloropyridinol	Water	0.25 ng/mL		The presence of the following substances up to 500 µg/mL were found to have no significant effect on assay results: calcium, magnesium, manganese, mercury, nitrate, phosphate, peroxide, silicates and thiosulfate. Copper, nickel and zinc concentrations up to 100 ppm, sulfite up to 250 ppm, iron up to 50 ppm, humic acid up to 5 ppm were also found to have no significant effect. Other similar compounds such as: Fluroxypyr-2-pyridinol, Chlorpyrifos-methyl, Profenfos, Metolachlor, Triclopyr, Chlorpyrifos.	RaPID Assay®: Requires a spectrophotometer, vortex mixer, and a magnetic rack. If the Trichloropyridinol concentration of a sample exceeds 6 ng/mL, the sample is subject to repeat testing using a diluted sample. Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze.

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Trinitrotoluene (TNT) (Method 4050)	Soil	0.5 to 0.7 ppm depending upon the kit		Other similar compounds such as: TETRYL, 2-Amino-4,6-dinitrotoluene, 1,3,5-Trinitrobenzene, 2,4-Dinitrotoluene.	Some kits require a spectrophotometer, others can use a color card. This test requires an extraction step. Test provides specific concentration levels. Test must be carried out at temperatures between 4° and 39° C. The reaction is temperature dependent—the lower the temperature the longer it takes.
Trinitrotoluene (TNT)	Water	.005 mg/L		Other similar compounds such as: TETRYL, 2-Amino-4,6-dinitrotoluene, 1,3,5-Trinitrobenzene, 2,4-Dinitrotoluene.	Can be performed with either a color card or spectrophotometer. Test provides specific concentration levels. Test must be carried out at temperatures between 4° and 39° C. The reaction is temperature dependent—the lower the temperature the longer it takes.
Urea Herbicides	Water	See interferences		The kit is calibrated to Chlortoluron. The other urea based herbicides that it will detect and their detection limits in ppb are given below. It is not specific to any of these. Diuron 0.02 Chloranocryl 0.023 Chlortoluron 0.04 Neburon 0.027 Linuron 0.02	Envirogard®: Microtiter plate reader. Store all reagents at 2-8°C. Kit must be brought to 18° to 27°C before use. Do not allow reagents to freeze. Temperature extremes (less than 0° and greater than 37° C) should be avoided.

Immunoassay for Organic Compounds (Continued)					
Analyte	Media	Detection Limit	Samples per Day	Interferences	Performance Tips and Limitations
Urea Herbicides (Continued)				Chlorbromuron 0.030 Monolinuron 0.037 Metobromuron 0.056 Monuron 0.07 Metoxuron 0.49 Propanil 0.55 Fluometuron 0.70 Isoproturon 5.9 Siduron 8.6 Fenuron 11 Propyzamide 25 Alachlor 59 Chlormethiuron 120 Methabenzthiazuron 130 Chloroxuron 130	

¹ California Military Environmental Coordination Committee (CMECC), 1996.

² EnSys Test Kit.