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Definitions

Acceptance Limits: limits established by the department that are used to determine if a laboratory has analyzed a proficiency testing sample successfully.

Analyte: the chemical substance, physical property or organism analyzed in a sample.

Analyte Group: a set of analytes that can be determined using the same method or technology and that constitute a unit, acknowledged by the department, of the third tier of certification or registration.

Aqueous: a certification or registration matrix designating any aqueous sample that is not a drinking water, and samples with no more than 15% settleable solids.

Proficiency Testing Sample or PT Sample: a sample obtained from an approved provider to evaluate the ability of a laboratory to produce an analytical test result meeting the definition of acceptable performance outlined in s. NR 149.27. The concentration of the analyte in the sample is unknown to the laboratory at the time of analysis. PT samples are used to evaluate whether the laboratory can produce analytical results within specified acceptance limits. Proficiency testing samples are also known as performance evaluation samples or reference samples.

Solid: a certification or registration matrix designating samples such as soils, sediments, sludges, organic liquids, oils or aqueous products and by-products of industrial processes, and aqueous samples with more than 10% settleable solids.

Test: any chemical, biological, physical, radiological or microscopic assay, examination or analysis conducted by a laboratory on water, wastewater, groundwater, biosolid, waste material, hazardous substance or any other matrix analyzed to determine compliance with a covered program.

Overview

Elimination of test categories ends the "key analyte" concept. Many of the tests previously excluded will require submittal of at least one passing PT. Many laboratories will discover that these analytes are already contained in the PTs they already purchase.

By eliminating the "key analyte" concept there should be less confusion regarding which analytes require a PT. Not every analyte for which certification is offered will require a PT however. Some compounds, such as sulfite, are so unstable that even a concentrated solution would degrade before the PT was packaged for shipment.

Proficiency Testing Sample Types

WWTP

EPA originally provided DMR-QA samples to wastewater permittees, drinking water laboratories received samples especially formulated for their contaminants, Water Supply (WS) samples. Water Pollution (WP) samples were developed for use by laboratories that performed wastewater analyses, but were not necessarily permittees. Availability and the number of analytes were limited, and, as state laboratory certification programs were developed, the demand for readily-available PTs created a new industry, that of the proficiency testing provider. Since EPA privatized proficiency testing over 10 years ago, the number of commercial PT providers has doubled.

Required PT Studies

WWTP

Laboratories that are certified or registered in the either the aqueous or solids matrix must submit acceptable PTs from a Water Pollution (WP) study. If a laboratory maintains the same analytical technology/analyte or analyte group certification in both matrices, only a single PT result is required.

The program has opted *not* to require use of solid or hazardous waste PTs for certification or registration in the solids matrix. The concentration ranges tend to be somewhat high and the acceptance criteria for some analytes is quite lenient, when compared to the WP. Solids PTs routinely cost double or more than the corresponding WP and their analysis really only demonstrates the effectiveness of the digestion, distillation or extraction. Since WP PTs demonstrate laboratory capability at lower concentrations, they are more likely to indicate laboratory quality. Finally, PTs are a

significant expense for all laboratories, this will help to keep costs down.

Required PTs for Analytes and Analyte Groups

The analytes in WP studies have been determined by the needs of EPA, state programs, including those that accredit laboratory under NELAP. The vast majority of compounds are regulated identically across the nation. Every state that has been granted primacy by EPA (such as the Wisconsin Permit Discharge Elimination System or Safe Drinking Water programs) requires contaminants be regulated as specified in federal rules. BOD, metals, VOCs and organochlorine pesticides are the same, no matter where one ventures in this nation.

One of the biggest problems with PTs is analyte concentration. Certainly every laboratory has experienced a PT that required dilution by a factor of 5, 10 or even 50 so that the result falls within their calibration range. Many laboratories automatically prepare multiple dilutions of PTs to ensure that one or more results will be "in range". But what happens if the PT concentration is much lower or higher than what your instrument is capable? Most metals PTs contain analytes at or below 1 mg/L, flame atomic absorption spectrophotometry (Flame AA) MDLs are usually above these concentrations. Most every laboratory that has used Flame AA in recent years has failed PTs simply because the concentrations are too low. As a result, laboratories that are certified or registered for Flame AA have been exempted from PT requirements. Colorimetric metals, except for hexavalent chromium, and ultra low-level metals "low-level mercury" are also exempted. Laboratories that perform these analyses must analyze quality control standards in lieu of PTs to demonstrate proficiency.

In the "old" NR 149, laboratories were required to pass 80% of all analytes in PTs for organic analyte groups included in test categories 10-16. These PTs usually had a minimum number of analytes (5, in most cases, when comprising a single class), and were required to comprised of a representative cross-section of all possible analytes (at least 8 different chemical classes in a BNA PT).

The concept of analyte groups works very well for analyses where there are either (a) a set list of analytes (e.g., PAHs, PCBs, or organochlorine pesticides) or (b) a large number of compounds that are routinely analyzed (e.g., VOCs and Base/Neutral/Acid extractables). The other types of pesticides and herbicides have always been problematic. If you were to survey commercial laboratories for their pesticide target analyte lists, you would probably get a different list from each laboratory. Even though we worked with PT providers on formulations, there were always problems.

Drinking water analysis under test category 18 has always required submittal of an acceptable Water Supply (WS) proficiency testing sample. With the exception of the VOC analyte group, PTs have been on an analyte-by-analyte basis. Since 2005, drinking water certification has been by method/analyte (or VOC analyte group) and laboratories have been required to submit acceptable PTs for each method/analyte combination. The PT requirements for drinking water will not substantively change for laboratories that will continue their drinking water matrix certifications.

More PTs?

The new code language was written to specifically allow use of the same PT for multiple analytical technologies. If a laboratory is certified in the aqueous matrix for both colorimetric/nitrate and electrometric/nitrate, they need only purchase a single PT, but must analyze and report results for both analytical technology/analyte combinations. You *must* successfully analyze a PT for each analytical technology/analyte combination in order to become or maintain certification or registration. Laboratories must also report each analytical technology/analyte combination to the PT provider to ensure that multiple results are provided to the department. Failure to report an acceptable PT result for any analytical technology/analyte will ultimately result in non-renewal and loss of certification for that combination.

Although the number of analytes requiring PTs has increased, laboratories will very likely find themselves ordering the same number PTs as in the past. Most formulations contain multiple analytes in a single ampule. For example, the solids (residue) PT available from four different providers could also be used for total dissolved solids. The nutrients PT that is purchased for ammonia also likely contains nitrate, nitrate + nitrate, and orthophosphorus. Depending on provider, it could also contain total Kjeldahl nitrogen and total phosphorus as well.

PT Result Submittal, Grading and Reporting

When submitting PT results, laboratories are required to identify the analytical method used to generate the result. Some providers have web-based submittal systems, where the laboratory selects the analytical method from a pull-down list. When submitting results by fax or mail, a method description is requested on the reporting form. Data faxed and mailed to providers is entered into databases and results are graded either according to equations determined from historical data (WP) or set limits (WS).

Reports are then generated and sent to both the laboratory and the WDNR. For the past year, PT providers (except WSLH) upload results directly into the program's database through a function of the WDNR Switchboard. After the PTs are uploaded, the system sends an email to each laboratory that participated in that particular study. This email lists each analyte and corresponding grade.

PT results from the WSLH have been uploaded electronically, using a different mechanism, for many years. The WSLH is currently working to update its reporting capacity by uploading results through the DNR Switchboard. In the future, their results files will be uploaded through the DNR Switchboard and email notifications will be real-time for all laboratories that participate in their PT program.

Acceptance Limits and Multi-Analyte Grading

All PT providers use the same criteria when determining whether a result is scored "Acceptable", "Check for Error" or "Not Acceptable". An "acceptable" PT result is

one where the reported value is within 2 standard deviations of the average reported value for that particular analyte (think of this as the warning limit for PTs). "Check for Error" is assigned when the reported result is greater than 2, yet less than 3 standard deviations (i.e., the control limit). A "Not Acceptable" score is when the submitted result exceeds the mean \pm 3 standard deviations.

These acceptance limits are based on several years of PT data from the providers that have been around for many years. Every PT provider that is approved by the WDNR Certification Program uses the same acceptance criteria. When submitting PT results, laboratories are required to identify the analytical method used to generate the result that is being reported. This allows the provider to evaluate results and to determine if there are problematic analytical techniques.

Multi-analyte grading applies to the limited number of analyte groups for which certification is offered by the program. This includes Volatile

Organic Compounds (VOCs), Base/Neutral/Acid Extractables (BNAs), Polynuclear Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Organochlorine Pesticides, PCB Congeners, and Dioxins and Furans (PCDD/PCDFs). Historically, laboratories were required to pass at least 80% of the possible analytes for certification. This has not changed. Like individual analyte PTs, "Acceptable" and "Check for Error" results both count as passes; "Not Acceptable", false negatives (when a laboratory fails to report an analyte in a multi-analyte PT), and false positives (when a laboratory reports an analyte that is *not* present in a multi-analyte PT), are counted as failures. The overall percentage is then determined as in the following example:

XYZ Laboratories submitted a PT result to renew its GC/VOC analyte group for 2010. The PT contained a total of 30 analytes and the laboratory submitted acceptable results for 25 analytes and failed 2 others. They also reported 2 compounds that were not present and did not report results for one that was present.

Number passed: 25
Number failed: 5

Overall Score: = [(25 - 5)/30] X 100%
 = 66.67%

Since the overall score for this PT is less than 80%, the laboratory must analyze another PT successfully by August 15 to ensure renewal for 2010.

Initial and Revised Applications- PTs Requirements

The requirements for initial and revised applications, have not substantively changed with the revision of ch. NR 149, Wisconsin Administrative Code. Laboratories that are seeking new or updated accreditations in the aqueous or solid matrix, must submit acceptable PT results from either a routine or "rapid response" WP study, analyzed

within 6 months, for each analytical technology/analyte combination under application.

Laboratories seeking initial or additional accreditations in the drinking water matrix must submit acceptable PT results from either a routine or "rapid response" WS study, analyzed within 6 months, for each method/analyte combination under application.

Please refer to Appendices C and D for lists of required PT samples for the WDNR Laboratory Certification Program.

Annual Renewal- PTs Requirements

As is the case with applications, PT requirements for annual renewal have not dramatically changed in the updated NR 149. If a PT is required for any analytical technology/analyte or analyte group, an acceptable WP study PT result must be submitted for renewal. Laboratories must analyze PTs after January 1 for renewal (PTs analyzed between September and December can only be used for applications). What has changed is the cut-off date for PT submittal. All PT results **must be received by WDNR by August 15** for renewal.

Many commercial PT providers offer WP and WS studies each month. Every PT study is open for 45 days from the day the PTs are shipped to laboratories. After a routine study closes, PT providers can take up to 30 days to issue reports to participating laboratories. For example, one provider shipped samples to laboratories on February 4, 2008. All results had to be reported by March 20, 2008. These results were provided to the WDNR on April 18, 2008. Reports to laboratories were sent the same day.

Because it can take up to a month to receive PT results, laboratories are strongly encouraged to participate in PT studies that close well before July 15. Since laboratories must submit an acceptable result for each analytical technology/analyte or analyte group that has a PT requirement, participating in studies earlier in the year will allow more time to address any failures. If a laboratory fails a PT in a study that closes in July, they will be required to utilize the "rapid response" type samples for renewal. These PTs typically cost significantly more than a routine study.

Those laboratories that participate in the Wisconsin State Laboratory of Hygiene PT Program typically have a shorter timeframe in which to analyze samples. This allows the WSLH to offer three studies between the months of January and July. Laboratories that fail WSLH PTs are automatically shipped the next study. If a laboratory fails all three rounds of WSLH PTs, they will be required to utilize a "rapid response" type PT from another commercial provider to meet the August 15 reporting deadline.

Failures of PTs in the Aqueous and Solid Matrices

When PT failures occur, laboratories are encouraged to first identify the cause of the failure. In many instances, the reported result is off by an obvious factor- one-half, double, or some other multiplier that is very likely a dilution factor that was inadvertently left out of the calculated result. Since PTs are required to be treated as

actually samples, they are subjected to digestions, distillations, and extractions that can also result in loss of analyte. Before analyzing a second PT, the laboratory should be confident that any obvious problem identified from the previous PT has been addressed. If the laboratory successfully analyzes a second PT, the analytical technology/analyte or analyte group will be renewed for the next certification period.

If the laboratory fails the second PT, the WDNR may initiate an assessment of the laboratory's quality control records to determine if reported data has been adversely affected. After the second PT failure the laboratory is required to:
Submit a corrective action report and initiate an action plan to correct the failure within 30 days of receiving the failed PT result from your provider. This action plan must include a timetable for correcting problems and analyzing a third PT sample.
Analyze a third PT within 60 days of the notification of the second failure.

If the third PT is acceptable, the laboratory will be renewed for that particular analytical technology/analyte or analyte group. If the third PT is unacceptable, the laboratory will be required to pass 2 consecutive PTs to maintain the certification or registration.

The WDNR will not renew the certification or registration of those analytes or analyte groups for which a laboratory has 3 consecutive failures and has not successfully analyzed 2 consecutive PTs prior to September 1.

When applying to have an analyte or analyte group reinstated after failing 3 consecutive PTs, the laboratory shall provide acceptable results on 2 consecutive PT sample studies for that analyte or analyte group.

Failures of PTs in the Drinking Water Matrix

If a certified laboratory fails a PTs sample in a WS study, the laboratory must analyze a second PT and the WDNR may require that the laboratory submit a corrective action report. If the results of the second PT are also unacceptable, the WDNR may not renew the laboratory's certification and may revoke the laboratory's certification for that particular method/analyte or analyte group combination.

Enforcement

The WDNR will no longer issue enforcement for successive failures of PTs submitted for accreditation in the aqueous or solid matrices.

The WDNR may revoke certifications in the drinking water matrix when a laboratory fails consecutive PTs for any analytical method/analyte or analyte group combination. This action reflects a requirement of the "Manual for the Certification of Laboratories Analyzing Drinking Water".

Examples of Required PTs

Table 1 lists the PTs required for a laboratory that is currently certified or registered in Test Categories 1-4 for traditional wastewater parameters, and new PT requirements for analytical technology/analyte combinations under the new structure.

WWTP Table 1. Traditional Wastewater Laboratory

Current NR 149			Revised NR 149- Renewal in 2009		
			<i>Tier 1: Aqueous Matrix</i>		
Test Category	Parameter	PT	Tier 2: Analytical Technology	Tier 3: Analyte	PT
01- Oxygen Demand	BOD	WP	Oxygen Demand Assays	BOD	WP
02- Nitrogen	Ammonia	WP	Electrometric	Ammonia	WP
03- Phosphorus	Phosphorus, Total	WP	Colorimetric	Phosphorus, Total	WP
04- Physical	TSS	WP	Gravimetric	Residue, Nonfilterable	WP

Table 2 lists the PTs required for a small commercial laboratory that provides analyses for wastewater treatment plants, including all of the above tests plus carbonaceous BOD and limited metals in effluents and biosolids using flame AA and graphite furnace AA.

Table 2. Small Commercial Laboratory

Current NR 149			Revised NR 149- Renewal in 2009		
			<i>Tier 1: Aqueous Matrix</i>		
Test Category	Parameter	PT	Tier 2: Analytical Technology	Tier 3: Analyte	PT
01- Oxygen Demand	BOD	WP	Oxygen Demand Assays	BOD	WP
01- Oxygen Demand	CBOD	Exempt	Oxygen Demand Assays	Carbonaceous BOD	WP
02- Nitrogen	Ammonia	WP	Electrometric	Ammonia	WP
03- Phosphorus	Phosphorus, Total	WP	Colorimetric	Phosphorus, Total	WP
04- Solids	TSS	WP	Gravimetric	Residue, Nonfilterable	WP
08- Metals I	Cadmium	WP	Graphite Furnace AA	Cadmium	WP
08- Metals I	Chromium	WP	Graphite Furnace AA	Chromium	WP
08- Metals I	Copper	WP	Flame AA	Copper	Exempt
08- Metals I	Lead	WP	Graphite Furnace AA	Lead	WP
08- Metals I	Silver	WP	Flame AA	Silver	Exempt
08- Metals I	Zinc	WP	Flame AA	Zinc	Exempt
			<i>Tier 1: Solids Matrix</i>		
			Tier 2: Analytical Technology	Tier 3: Analyte	PT
			Graphite Furnace AA	Cadmium	WP
			Graphite Furnace AA	Chromium	WP
			Flame AA	Copper	Exempt
			Graphite Furnace AA	Lead	WP
			Flame AA	Silver	Exempt
			Flame AA	Zinc	Exempt

Table 3 lists the PTs required for a typical commercial laboratory, where current certifications include test categories 1-6, 8, 10, 12, 15 and 16 and new PT requirements under the new structure. The laboratory analyzes wastewater, groundwater, biosolids and soils for many of these analytes.

Table 3. Typical Commercial Laboratory

Current NR 149			Revised NR 149- Renewal in 2009		
			<i>Tier 1: Aqueous Matrix</i>		
Test Category	Parameter	PT	Tier 2: Analytical Technology	Tier 3: Analyte	PT
1- Oxygen Demand	BOD	WP	Oxygen Demand Assays	BOD	WP
1- Oxygen Demand	CBOD	Exempt	Oxygen Demand Assays	Carbonaceous BOD	WP
2- Nitrogen	Ammonia	WP	Colorimetric	Alkalinity	WP
2- Nitrogen	Nitrate	WP	Colorimetric	Ammonia	WP
2- Nitrogen	Nitrite	Exempt	Colorimetric	Chloride	WP
3- Phosphorus	Phos, Total	WP	Colorimetric	COD	WP
3- Phosphorus	Orthophos	Exempt	Colorimetric	Cyanide	WP
4- Physical	TSS	WP	Colorimetric	Hexavalent Chromium	WP
4- Physical	TDS	Exempt	Colorimetric	Nitrate	WP
4- Physical	Oil & Grease- HEM	Exempt	Colorimetric	Nitrite	WP
5- General I	Alkalinity	Exempt	Colorimetric	Phosphorus, Total	WP
5- General I	Hardness	WP	Colorimetric	Phenolics	WP
6- General II	COD	WP	Colorimetric	Sulfate	WP
6- General II	Chloride	WP	Gravimetric	Residue, Filterable	WP
6- General II	Cyanide	WP	Gravimetric	Residue, Nonfilterable	WP
6- General II	Fluoride	WP	Gravimetric- HEM	Oil & Grease- HEM	WP
6- General II	Sulfate	WP	Ion Chromatography	Chloride	WP
6- General II	Phenolics	WP	Ion Chromatography	Fluoride	WP
7- General III	Ignitability	Exempt	Ion Chromatography	Nitrate	WP
8- Metals	Aluminum	WP	Ion Chromatography	Nitrite	WP
8- Metals	Antimony	WP	Ion Chromatography	Orthophosphorus	WP
8- Metals	Arsenic	WP	Ion Chromatography	Sulfate	WP
8- Metals	Barium	WP	Cold Vapor AA	Mercury	WP
8- Metals	Beryllium	WP	Graphite Furnace AA	Antimony	WP
8- Metals	Boron	WP	Graphite Furnace AA	Arsenic	WP
8- Metals	Cadmium	WP	Graphite Furnace AA	Beryllium	WP
8- Metals	Calcium	WP	Graphite Furnace AA	Selenium	WP
8- Metals	Hex Chrome	Exempt	Graphite Furnace AA	Thallium	WP
8- Metals	Chromium	WP	Graphite Furnace AA	Vanadium	WP
8- Metals	Copper	WP	ICP	Aluminum	WP
8- Metals	Iron	WP	ICP	Antimony	WP
8- Metals	Lead	WP	ICP	Arsenic	WP
8- Metals	Magnesium	WP	ICP	Barium	WP
8- Metals	Manganese	WP	ICP	Beryllium	WP
8- Metals	Mercury	WP	ICP	Boron	WP
8- Metals	Molybdenum	WP	ICP	Cadmium	WP
8- Metals	Nickel	WP	ICP	Calcium	WP
8- Metals	Potassium	WP	ICP	Chromium	WP
8- Metals	Selenium	WP	ICP	Copper	WP
8- Metals	Silver	WP	ICP	Hardness	
8- Metals	Sodium	WP	ICP	Iron	WP
8- Metals	Thallium	WP	ICP	Lead	WP
8- Metals	Vanadium	WP	ICP	Magnesium	WP
8- Metals	Zinc	WP	ICP	Manganese	WP
10- Purgeables	VOCs	WP	ICP	Molybdenum	WP
12- Extractables by GC/MS	BNA Extractables	WP	ICP	Nickel	WP
15- Petroleum	WI DRO	WP	ICP	Potassium	WP
15- Petroleum	WI GRO	WP	ICP	Selenium	WP
15- Petroleum	WI PVOC	WP	ICP	Silver	WP
16- Organochlorines	Organochlorine Pesticides	WP	ICP	Sodium	WP
16- Organochlorines	PCBs	WP	ICP	Thallium	WP
			ICP	Vanadium	WP

			ICP	Zinc	WP
			GC	DRO	WP
			GC	GRO	WP
			GC	PVOC	WP
			GC	Organochlorine Pesticides Analyte Group	WP
			GC	PCBs Analyte Group	WP
			GC/MS	VOCs Analyte Group	WP
			GC/MS	BNAs Analyte Group	WP
			Tier I: Solids Matrix		
			Tier 2: Analytical Technology	Tier 3: Analyte	PT
			Colorimetric	Cyanide	WP
			Cold Vapor AA	Mercury	WP
			Graphite Furnace AA	Antimony	WP
			Graphite Furnace AA	Arsenic	WP
			Graphite Furnace AA	Beryllium	WP
			Graphite Furnace AA	Selenium	WP
			Graphite Furnace AA	Thallium	WP
			ICP	Aluminum	WP
			ICP	Antimony	WP
			ICP	Arsenic	WP
			ICP	Barium	WP
			ICP	Beryllium	WP
			ICP	Boron	WP
			ICP	Cadmium	WP
			ICP	Calcium	WP
			ICP	Chromium	WP
			ICP	Copper	WP
			ICP	Iron	WP
			ICP	Lead	WP
			ICP	Magnesium	WP
			ICP	Manganese	WP
			ICP	Molybdenum	WP
			ICP	Nickel	WP
			ICP	Potassium	WP
			ICP	Selenium	WP
			ICP	Silver	WP
			ICP	Sodium	WP
			ICP	Thallium	WP
			ICP	Vanadium	WP
			ICP	Zinc	WP
			GC	DRO	WP
			GC	GRO	WP
			GC	PVOC	WP
			GC	Organochlorine Pesticides Analyte Group	WP
			GC	PCBs Analyte Group	WP
			GC/MS	VOCs Analyte Group	WP
			GC/MS	BNAs Analyte Group	WP
			Waste Characterization	Pensky-Martens Flashpoint	None

Table 4 lists the PTs required for a large drinking water laboratory under the current and new accreditation structure.

Table 4. Large Drinking Water Laboratory

Current NR 149		Revised NR 149- Renewal in 2009		
		<i>Tier I: Drinking Water Matrix</i>		
Test Category 18- Drinking Water	PT	Tier 2: Method	Tier 3: Analyte	PT
Cyanide, EPA 335.4	WS	EPA 335.4	Cyanide	WS
Fluoride, EPA 300.0	WS	EPA 300.0	Fluoride	WS

Nitrate, EPA 300.0	WS	EPA 300.0	Nitrate	WS
Nitrite, EPA 300.0	WS	EPA 300.0	Nitrite	WS
Sulfate, EPA 300.0	WS	EPA 300.0	Sulfate	WS
Antimony, EPA 200.8	WS	EPA 200.8	Antimony	WS
Arsenic, EPA 200.8	WS	EPA 200.8	Arsenic	WS
Barium, EPA 200.8	WS	EPA 200.8	Barium	WS
Beryllium, EPA 200.8	WS	EPA 200.8	Beryllium	WS
Cadmium, EPA 200.8	WS	EPA 200.8	Cadmium	WS
Chromium, EPA 200.8	WS	EPA 200.8	Chromium	WS
Copper, EPA 200.8	WS	EPA 200.8	Copper	WS
Lead, EPA 200.8	WS	EPA 200.8	Lead	WS
Mercury, EPA 200.8	WS	EPA 200.8	Mercury	WS
Nickel, EPA 200.8	WS	EPA 200.8	Nickel	WS
Selenium, EPA 200.8	WS	EPA 200.8	Selenium	WS
Thallium, EPA 200.8	WS	EPA 200.8	Thallium	WS
Haloacetic Acids, EPA 552.2	WS	EPA 552.2	Haloacetic Acids	WS
Total Trihalomethanes, EPA 524.2	WS	EPA 524.2	Total Trihalomethanes	WS
Regulated VOCs, EPA 524.2	WS	EPA 524.2	Regulated VOCs	WS
EDB & DBCP, EPA 504.1	WS	EPA 504.1	EDB & DBCP	WS
2,4-D, EPA 515.4	WS	EPA 515.4	2,4-D	WS
2,4,5-T, EPA 515.4	WS	EPA 515.4	2,4,5-T	WS
Dalapon, EPA 515.4	WS	EPA 515.4	Dalapon	WS
Dinoseb, EPA 515.4	WS	EPA 515.4	Dinoseb	WS
Pentachlorophenol, EPA 515.4	WS	EPA 515.4	Pentachlorophenol	WS
Picloram, EPA 515.4	WS	EPA 515.4	Picloram	WS
Alachlor, EPA 525.2	WS	EPA 525.2	Alachlor, EPA 525.2	WS
Atrazine, EPA 525.2	WS	EPA 525.2	Atrazine, EPA 525.2	WS
Benzo(a)pyrene, EPA 525.2	WS	EPA 525.2	Benzo(a)pyrene	WS
Bis[2-ethylhexyl]adipate, EPA 525.2	WS	EPA 525.2	Bis[2-ethylhexyl]adipate	WS
Bis[2-ethylhexyl]phthalate, EPA 525.2	WS	EPA 525.2	Bis[2-ethylhexyl]phthalate	WS
Endrin, EPA 525.2	WS	EPA 525.2	Endrin	WS
Heptachlor, EPA 525.2	WS	EPA 525.2	Heptachlor	WS
Heptachlor epoxide, EPA 525.2	WS	EPA 525.2	Heptachlor epoxide	WS
Hexachlorobenzene, EPA 525.2	WS	EPA 525.2	Hexachlorobenzene	WS
Hexachlorocyclopentadiene, EPA 525.2	WS	EPA 525.2	Hexachlorocyclopentadiene	WS
Lindane, EPA 525.2	WS	EPA 525.2	Lindane	WS
Methoxychlor, EPA 525.2	WS	EPA 525.2	Methoxychlor	WS
Simazine, EPA 525.2	WS	EPA 525.2	Simazine	WS
Carbofuran, EPA 531.1	WS	EPA 531.1	Chlordane	WS
Oxamyl, EPA 531.1	WS	EPA 531.1	Oxamyl	WS
Diquat, EPA 547	WS	EPA 547	Diquat	WS
Endothall, EPA 548.1	WS	EPA 548.2	Endothall	WS
Glyphosate, EPA 549.2	WS	EPA 549.2	Glyphosate	WS

The PTs that are required for certification in the aqueous and solid matrices will be identified later and listed in Appendix B; drinking water matrix PTs will be listed in Appendix C of this document.

Appendix A. Approved Proficiency Testing Providers

Appendix B. Required Proficiency Testing Samples for the Aqueous and Solid Matrices

Appendix C. Required Proficiency Testing Samples for the Drinking Water Matrix