The scope statement for this rule, SS 078-12 was approved by the Governor on October 10, 2010 and published in the Administrative Register on October 31, 2012in Register number 682, and approved by the Natural Resources Board on May 22, 2013. This rule was approved by the Governor on_____.

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
REPEALING AND RECREATING RULES

The Wisconsin Natural Resources Board proposes an order to repeal and recreate NR 149 relating to laboratory accreditation and affecting small business.

SS-22-12

Analysis Prepared by the Department of Natural Resources

1. Statute Interpreted:

s. 299.11, Stats.

2. Statutory Authority:

ss. 299.11 (3), 229.11 (4), 299.11 (5), 299.11 (7), 299.11(8), 299.11 (9), Stats.

3. Explanation of Agency Authority:

Section 299.11 (3) Stats. authorizes the department to seek recommendations of the certification standards review council for the general administration of the laboratory certification and registration program.

Section 299.11 (4), Stats. defines the applicability of the certification and registration rules to laboratories submitting data for covered programs.

Section 299.11 (5) Stats. allows the department to recognize certifications from other agencies, governments, and private organizations.

Section 299.11 (7) Stats. authorizes the department to promulgate rules for the certification of laboratories submitting data for covered program.

Section 299.11 (8) Stats. authorizes the department to promulgate rules for the registration of laboratories submitting data for covered programs.

Section 299.11 (9) Stats. authorizes the department to establish a regulated schedule of fees to cover the costs of administering a laboratory certification and registration program.

4. Related Statutes or Rules:

Sections 15.107 (12) and 93.12, Stats.

Chs. NR 106, 110, 123, 131, 132, 140, 150, 153, 155, 157, 182, 200, 206, 210, 211, 212, 214, 216, 219,347, 507, 528, 662, 664, 665, 700, 712, 716, 738, 747, 809, 810, 811, 812 and 845.

5. Plain Language Analysis:

Chapter NR 149 sets requirements for the certification and registration of laboratories that submit data to the department for covered programs. Since the last major revision of the chapter, laboratory operations have undergone significant

advances. Other state and national certification programs have promulgated and revised rules that reflect these advances. This version of ch. NR 149 incorporates many of those changes and, where appropriate, moderates them by incorporating suggestions expressed by our regulated community.

The proposed rule introduces efficiencies for administering the certification and registration program, improves the structure used for certification and registration of laboratories, identifies clear steps and procedures for the certification and registration process, establishes a more equitable fee structure, clarifies requirements for proficiency testing of laboratories, stipulates procedures for on-site evaluations of laboratories, and adds specificity and flexibility to quality systems requirements for laboratories.

6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:

The US EPA has established a program for the certification of laboratories that analyze drinking water for compliance with the safe drinking water act. The US EPA delegates the authority to certify laboratories to states that have established equivalent programs. The proposed rule incorporates the latest changes in the regulations and the manual used by EPA to certify drinking water laboratories. Thus this revision makes the Wisconsin certification and registration program current with the US EPA's.

The US EPA sponsors a National Environmental Laboratory Accreditation Program (NELAP) for states that voluntarily seek such recognition. The procedures for accrediting laboratories under NELAP are contained in standards promulgated by the National Environmental Laboratory Accreditation Conference (NELAC). The proposed rule contains elements of the NELAC Standards recommended for incorporation by our regulated community. In most cases, the incorporated elements address standard practices commonly performed by laboratories.

7. Comparison with Similar Rules in Adjacent States:

All of the adjacent states, Minnesota, Illinois, Michigan, and Iowa, have primacy from the US EPA to certify laboratories analyzing drinking water. Their rules must mirror federal requirements to maintain the states' authority. Our proposed revision makes the drinking water portion of our chapter current with those of the adjacent states.

Wisconsin, Minnesota, Iowa, and Illinois have similar certification, registration, or accreditation programs for laboratories analyzing wastewater, hazardous waste, and solid waste. Michigan requires certification only for those laboratories analyzing drinking water. Illinois and Minnesota are recognized NELAP accrediting authorities and its rules agree or are stricter than those the department proposes for ch. NR 149. In addition, the Minnesota Pollution Control Agency (MPCA) accredits wastewater laboratories and its rules are similar to those proposed for ch. NR 149. Iowa has a certification program that is more limited in scope than ours because the state has few laboratories providing environmental analytical services other than the University of Iowa State Hygienic Laboratory.

To compare fees between the states, we used an average annual proposed fee for the 30 largest commercial laboratories as one category, and used a wastewater laboratory certified for BOD, TSS, Ammonia, and Phosphorous as an indicator of the typical wastewater laboratory fee. Using these two categories, Wisconsin proposed fees are $5,311/$1,114 for commercial/wastewater laboratories. Illinois assesses $8,400/$3,400 annually for these same types of laboratories. Minnesota's fees are $10,900/$1,800. Iowa's fees are lower than WI's for wastewater laboratories, but higher for commercial laboratories ($10,800/$800). Michigan charges $6,729 for certification of drinking water laboratories; no certification for wastewater laboratories is required.

8. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings Support the Regulatory Approach Chosen:

To create this proposed rule, the Department engaged in a structured process to seek input from all stakeholders. The core of this effort consisted in convening a rule revision advisory committee (RAC) composed of all the members of the Certification Standards Review Council, a body authorized by s. 15.107 (1), Stats. The following constituencies were represented in the NR 149 RAC:

- Small and Large Municipal Wastewater Treatment Plants
- Commercial Laboratories
- Industrial Laboratories

- Wisconsin Environmental Laboratories Association (WELA)
- Municipal Environmental Group (MEG)
- Wisconsin State Laboratory of Hygiene
- Laboratory Certification and Registration Program

The NR 149 RAC envisioned a code that had greater specificity without sacrificing flexibility and alternatives for compliance. Over the course of approximately 20 meetings held from January 2014 to April 2017, the NR 149 RAC offered advice and guidance on every aspect of the Certification and Registration Program. Meetings were facilitated by program staff. The agreements reached were captured in standardized documents reviewed and endorsed by the NR 149 RAC. These documents were used in drafting specific language included in the proposed rule.

The NR 149 RAC reviewed a complete draft of the proposed chapter in March 2017. The comments received and the input received by the Certification and Registration Program and other Department programs are reflected in this proposed rule.

The following table illustrates the methodologies and data considered in producing this proposed rule:

Methodology	Data Considered
Advisory Committee	Input from all stakeholders on all aspects of the Laboratory Certification and Registration Program.
Decision Making Rule	NR 149 RAC made decisions by reaching substantial agreement and when necessary, registering consensus.
Topic Prompters	Captured decisions made by NR 149 RAC on program administration, program structure, certification and registration process, proficiency testing, on-site laboratory evaluations and quality control.
Model Documents	Alternatives for certification and registration structure, fee structure, applications, and quality systems.
Comparative Analysis	Scope of certification and registration of current laboratories in the program to arrive at equitable fee structure. Analytical technologies were assessed and assigned a fee based on relative workload to evaluate them. Fee structure and assessments of certification programs in other states.
Feasibility	Certification and covered program staff reviewed changes endorsed by RAC to determine feasibility of implementation.

9. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:

In order to be equitable and efficient to all laboratories, the new fee schedule attempts to match the time spent by WDNR staff during laboratory inspections to fees paid (RVU's) by removing the restrictive cap on the fees that larger laboratories are required to pay.

In terms of cost of certification, only 32% of commercial laboratories are expected to see a fee increase. The average fee increase for the commercial laboratories that are projected to see a fee increase, is estimated to be $947 per laboratory per year. The rest of the commercial laboratories (68%) are projected to see a decrease in fees paid per year. On average these commercial laboratories will see an estimated $124 per laboratory per year decrease in fees. One industrial laboratory will see an annual increase of $310. The remaining 49 industrial laboratories will see an estimated $56 decrease in fees per laboratory per year.

10. Effect on Small Business (initial regulatory flexibility analysis):

Small business laboratories are not likely to change their scope of certification under the proposed certification structure, as long as the costs for maintaining those certifications do not increase dramatically. In general, the proposed rule maintains these costs as in check.

When given options for quality control analyses that could reduce operation costs, laboratories are selective and respond that cost is not the sole determinant in selecting an option. Some small businesses are likely to continue to choose existing more costly practices and may need to be educated in selecting valid and more economical alternatives.

Most operating costs in laboratories are associated with maintaining staff to perform analyses. The proposed rule does not require increases in staff to ensure compliance with it.

The Department concludes that the proposed rule provides flexibility in meeting many of its requirements. Small businesses may be able to realize some savings in implementing the proposed rule by judiciously selecting among the options contained in it. The specificity and flexibility contained in the proposed rule bring equity and uniformity to all laboratory operations and are likely to increase the competitiveness of small laboratories providing analytical services in and out of state.

11. Agency Contact Person:

Tom Trainor
Certification Services/BEAS
Tom.trainor@wisconsin.gov
920-412-5970
WDNR
2984 Shawano Avenue
Green Bay, WI 54313

12. Place where comments are to be submitted and deadline for submission:
Written comments may be submitted at the public hearings, by regular mail, fax or email to:
Same as above

Written comments may also be submitted to the Department using the Wisconsin Administrative Rules Internet Web site at http://adminrules.wisconsin.gov.

Deadline for comments: July 12, 2017

Hearing Information
Date: 7.10.17
Time: 11:00 – 12:00 AM
Locations:
DNR – 101 S. Webster, St, Room 708, Madison, WI
DNR – 2984 Shawano Avenue, Room 113 (Whitetail), Green Bay, WI
DNR – 1300 W Clairemont, Paddlefish Room, Eau Claire, WI 54701

The consent of the Attorney General will be requested for the incorporation by reference of

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[See pdf for correctly formatted document.]

SECTION 1. NR 149 is repealed and recreated to read:

SUBCHAPTER I - GENERAL PROVISIONS

NR 149.01 Purpose. The purpose of this chapter is to establish a program for the accreditation of laboratories performing testing under s. 299.11, Stats.

NR 149.02 Applicability. (1) This chapter specifies requirements for the administration of the laboratory accreditation program by the department.

(2) Unless otherwise exempted in this section, this chapter applies to all of the following:

(a) Laboratories applying for accreditation.

(b) Laboratories holding an accreditation.

(c) Laboratories submitting data to the department for a covered program.

(d) Laboratories generating data that is necessary for the department to determine compliance with a covered program.

Note: Administrative codes and covered programs requiring analyses to be performed by an accredited laboratory are chs. NR 106 – Procedures For Calculating Water Quality Based Effluent Limitations For Point Source Discharges To Surface Waters, 110 – Sewerage Systems, 123 – Well Compensation Program, 131 – Nonferrous Metallic Mineral Prospecting, 132 – Nonferrous Metallic Mineral Mining, 140 – Groundwater Quality, 150 – Environmental Analysis and Review Procedures, 153 – Targeted Runoff Management And Notice Of Discharge Grant Programs, 155 – Urban Nonpoint Source Water Pollution Abatement And Storm Water Management Grant Program, 157 – Management of Pcbs and Products Containing Pcbs, 182 – Nonferrous Metallic Mineral Mining Wastes, 200 – Application For Discharge Permits And Water Quality Standards Variances, 206 – Land Disposal of Municipal and Domestic Wastewaters, 210 – Sewage Treatment Works, 211 – General Pretreatment Requirements, 212 – Waste Load Allocated Water Quality Related Effluent Limitations, 214 – Land Treatment of Industrial Liquid Wastes, By-Product Solids And Sludges, 216 – Storm Water Discharge_Permits, 219 – Analytical Test Methods and Procedures, 347 – Sediment Sampling and Analysis, Monitoring Protocol And Disposal Criteria For Dredging Projects, 507 – Environmental Monitoring for Landfills, 528 - Management of Accumulated Sediment from Storm Water Management Structures, 662 – Hazardous Waste Generator Standards, 664 – Hazardous Waste Treatment, Storage and Disposal Facility Standards, 665 – Interim License Hazardous Waste Treatment, Storage and Disposal Facility Standards, 700 – General Requirements, 712 – Personnel Qualifications For Conducting Environmental Response Actions, 716 –Site Investigations, 738 – Temporary Emergency Water Supplies, 747 – Petroleum Environmental Cleanup Fund, 809 – Safe Drinking Water, 810 – Requirements For The Operation And Design of Community Water Systems, 811 – Requirements For The Operation and Design Of Community Water Systems, 812 – Well Construction And Pump Installation and 845 – County Administration of NR 812 Private Wells Code.

Note: Links to the codes specified above can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(3) Laboratories performing analyses for the safe drinking water program under ch. NR 809 or for the well construction and pump installation testing program under ch. NR 812 shall be certified; registration is not available for these analyses. Additional requirements for laboratories performing compliance analysis under chs. NR 809 and 812 are specified in s. NR 149.19.

(4) Laboratories performing analysis for whole effluent toxicity testing shall meet the requirements specified in s. NR 149.20.

(5) This chapter applies to laboratories analyzing industrial pre-treatment samples when the department is the control authority of a pre-treatment ordinance or when another control authority requires it.

(6) Laboratories performing asbestos or radiological testing for a covered program shall be certified or approved by the EPA or the department.

Note: Laboratories performing bacteriological testing for a covered program are certified or approved under ch. ATCP 77 by the department of agriculture, trade, and consumer protection.

(7) (a) This chapter establishes compliance requirements that shall be incorporated into the quality systems of all laboratories accredited by the laboratory accreditation program.

(b) Laboratories shall meet any requirements pertaining to analyses and analytical operations contained in the methods, regulations, or covered programs when those requirements are more stringent than the ones specified in this chapter, unless this chapter grants explicit, alternative allowances.

(c) When it is not apparent whether the minimum requirements of this chapter or those specified in the methods, regulations, or covered programs are more stringent, laboratories shall meet the requirements in the methods, regulations, or covered programs.

(d) The department shall retain the authority to make a decision on the stringency of a laboratory requirement when the applicability of a requirement is disputed.

(e) The order of applicability of a requirement is method, code, and statute, whenever each succeeding source contains more general or less stringent requirements that are not in conflict.

(f) When a laboratory incorporates a procedure that is neither expressly permitted nor prohibited by the method, the department shall retain the authority to determine the acceptability of the practice.

NR 149.03 Definitions. In this chapter:

(1) "Acceptance limits" means limits established by the department that are used to determine if a laboratory has analyzed a proficiency testing sample successfully.

(2) "Accreditation" and "accredited" mean formal recognition that an organization is competent to perform specific types of tests as determined by this department. "Accreditation" and "accredited" include "certification" and "registration".

(3) "Accreditation matrix" means a matrix type that is part of the first tier of a field of accreditation under s. NR 149.13 (2). Accreditation matrices are drinking water, aqueous, and non-aqueous matrices.

(4) "Accuracy" means the closeness of a measured value to an accepted reference value or standard.

(5) "Algorithm" means a process or set of rules to be followed in calculations for solving a problem.

(6) "Analysis day" means the day in which a specific type of analysis is performed.

(7) "Analyte" means the chemical substance, physical property, or organism analyzed in a sample.

(8) "Analyte group" means 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 accreditation under s. NR 149.13 (4).

(9) "Analytical balance" means a balance that is capable of measuring masses to within 0.0001 g.

(10) "Analytical class" means a set of analytes or analyte groups of similar behavior or composition, or a set of analytes or analyte groups regulated under the same provisions of the federal safe drinking water act, that is used to organize the third tier of accreditation under s. NR 149.13 (4).

(11) "Analytical instrument" means any test instrument used to provide analytical results that is not support equipment.

(12) "Analytical staff" means staff that includes laboratory directors, supervisory personnel, quality assurance personnel, technicians, chemists, biologists, preparation analysts, and instrument analysts.

(13) "Aqueous" means an accreditation matrix that is a single phase water sample and that is not drinking water.

(14) "Batch" means a set of environmental samples prepared or analyzed together using the same process, personnel, and lots of reagents.

(a) A "preparation batch" means a set of one to 20 environmental samples of the same accreditation matrix, meeting batch criteria, and with a maximum time of 24 hours between the start of processing of the first and last sample in the batch.

(b) An "analytical batch" means a set of environmental samples which are analyzed together as a group in an uninterrupted sequence.

(15) "Bias" means the consistent deviation of measured values from a true value caused by systematic errors in a procedure or a measurement process.

(16) "Blank" means a clean sample or sample matrix processed to measure artifacts in the measurement process.

(17) "Calibration" means the process used to establish an observed relationship between the response of an analytical instrument and a known amount of analyte, or the process used to determine, by measuring or comparison with a reference standard, the correct value of each scale reading in an instrument, meter, or measuring device.

(18) "Calibration blank" means a blank that consists of the same solvent as that used for the calibration standards, but without the analytes.

(19) "Calibration function" means the specific mathematical relationship established to relate calibration standards to instrument response.

(20) "Calibration model" means an algorithm that is used to determine an average calibration factor, average response factor, linear regression, or non-linear regression.

(21) "Certificate" means a document owned by the department and issued to a laboratory that indicates the fields of accreditation granted to a laboratory.

(22) "Certification" or "certified" means certification, under s. 299.11 (7), Stats., of laboratories that perform compliance analyses for hire or to laboratories that perform compliance drinking water analyses in accordance with the standards and requirements of this chapter.

(23) "Coefficient of determination" means a quantity that measures the degree of agreement between the points in a calibration and the function derived to connect the points.

(24) "Confirm" means to verify the identity of a compound by an alternative procedure, column, detector, wavelength, or by a technology that bases detection on a different scientific principle from the one originally used for identifying the compound.

(25) "Continuing calibration blank" or "CCB" means a blank that consists of the same solvent as that used for the calibration standards, but without the analytes, analyzed during an analysis sequence to verify the continued absence of instrumental interferences.

(26) "Continuing calibration verification standard" or "CCV standard" means a standard of known concentration of analyte used to assure continued calibration accuracy during an analysis sequence.

(27) "Correlation coefficient" means a quantity that measures the degree of agreement between the points in a calibration curve and the linear function derived to connect the points.

(28) "Corrective action" means any measure taken to eliminate or prevent the recurrence of the causes of an existing nonconformity, defect, or undesirable condition.

(29) "Council" means the certification standards review council created under s. 15.107 (12), Stats.

(30) "Covered program" means a program listed or enumerated in s. 299.11 (1) (d) 1. To 9., Stats., and includes any department program, project, permit, contract, or site investigation that requires analytical work to be performed by an accredited laboratory.

Note: The note in s. NR 149.02 (2) (d) provides a list of department administrative rules of covered programs requiring accreditation under this chapter.

(31) "Deficiency" means a documented or verifiable deviation from the requirements of this chapter that is noted during an on-site evaluation or while reviewing analytical data produced by a laboratory.

(32) "Department" means the department of natural resources.

(33) "EPA" means the United States environmental protection agency.

(34) "Field of accreditation" means a unit by which the department grants or recognizes accreditation to a laboratory as provided in s. NR 149.13.

(35) "For hire" means offering analyses for payment or non-monetary compensation.

(36) "Inert matrix" means a matrix either containing insignificant or undetectable levels of the analytes that will be analyzed in an analytical test. Typical inert matrices are distilled water, deionized water, diatomaceous earth, and Ottawa sand.

(37) "Initial calibration blank" or "ICB" means a blank that consists of the same solvent as that used for the calibration standards, but without the analytes, analyzed following the initial calibration and prior to quantitating any samples in order to verify the absence of instrumental interferences.

(38) "Initial calibration verification standard" or "ICV standard" means a standard of known concentration, prepared using second source standards, analyzed following the initial calibration and prior to quantitating any samples to assure initial calibration accuracy.

(39) "Internal standard" means a known concentration of an analyte added to calibration standards, blanks, laboratory control samples, matrix spikes, matrix spike duplicates, replicate samples, and environmental samples as a reference for evaluating and controlling the precision and bias of a method.

(40) "Laboratory" means a facility that performs tests in connection with a covered program that requires data from an accredited laboratory. A facility consisting of a principal laboratory and annexes within 5 miles of the principal laboratory may be considered a single laboratory at the discretion of the department. When the terms laboratory or laboratories are used unmodified in this chapter, the terms include laboratories accredited under this chapter and those seeking accreditation under this chapter.

(41) "Laboratory control sample" or "LCS" means a sample of an inert matrix or a matrix with a consistent concentration of the analytes of interest, fortified with a verified known amount of the analytes of interest. The purpose of an LCS is to determine whether the methodology is in control and whether the laboratory is capable of making accurate and precise measurements.

Note: In many EPA methods, the term "lab-fortified blank" is substantially equivalent to an LCS.

(42) "Laboratory equipment" means any support equipment or analytical instrument necessary to or involved in generating the results of an analysis.

(43) "Limit of detection" or "LOD" means the lowest concentration or amount of analyte that can be identified, measured, and reported with confidence that the concentration is not a false positive value. The LOD approximates the method detection limit and is determined under the method cited in sub. (50).

(44) "Limit of quantitation" or "LOQ" means the lowest concentration or amount of an analyte for which quantitative results can be obtained and is 10/3 the LOD.

(45) "MCL" means maximum contaminant level and is the maximum permissible level of a contaminant in water that is delivered to any user of a public water system.

(46) "Matrix spike" or "MS" means a sample prepared by adding a known quantity of analyte to an aliquot of an environmental sample and subjecting it to all of the sample-processing steps of a method. The purpose of the matrix spike is to determine the ability to recover the known analyte in the environmental sample.

Note: In many EPA methods, the term "lab-fortified matrix" is substantially equivalent to a MS.

(47) "Matrix spike duplicate" or "MSD" means a replicate MS prepared and processed in the laboratory in the same manner as its corresponding MS, and generally used to determine the precision of the recovery of an analyte.

(48) "Method" means a procedure used for measuring the presence and concentration of physical and chemical pollutants. Methods used for the analysis of pollutants must be those recognized by the department as appropriate for the analyte and concentration being determined.

(49) "Method blank" means an aliquot of reagent water or clean sample matrix that is treated and processed exactly as a sample including exposure to all glassware, equipment, solvents, reagents, internal standards, and surrogates to measure artifacts in the measurement process.

Note: In many EPA methods, the term "laboratory reagent blank" is substantially equivalent to a method blank.

(50) "Method detection limit" or "MDL" means the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. The MDL is generated according to the protocol specified in 40 CFR Part 136, Appendix B.

(51) "NIST" means the National Institute for Standards and Technology.

(52) "Non-aqueous" means an accreditation matrix that includes soils, sediments, sludges, organic liquids, or oils.

Note: The non-aqueous matrix is an all-encompassing designation that covers all matrices that are not drinking water or non-potable water. It includes solid wastes, tissues and multi-phasic wastes.

(53) "Nonconformance" means a documented or verifiable deviation from the requirements of this chapter or a deviation from the requirements of a quality system.

(54) "On-site evaluation" means an assessment conducted by the department at a laboratory seeking or maintaining accreditations to determine actual or potential compliance with the requirements of this chapter.

(55) "Ownership" means owning or controlling, directly or indirectly, a laboratory facility through an equity interest, or its equivalent, of 10% or more.

(56) "Pesticide" means a chemical substance defined in s. 94.67 (25) and (25m), Stats., an isomer of a pesticide, a degradation product, or metabolic product of a pesticide.

(57) "Precision" means the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. Precision is usually expressed as the standard deviation, variance, or range, in either absolute or relative terms.

(58) "Proficiency testing sample" or "PT sample" means a sample obtained from an approved proficiency testing sample 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.

(59) "Qualify" means placing a written statement accompanying or referencing test results, identifying anomalies or deviations from this chapter, encountered in generating the results**.**

(60) "Quality assurance" means an integrated system of activities involving planning, control, assessment, reporting, and improvement to ensure that a product or service meets defined standards of quality.

(61) "Quality control" means the overall system of technical activities designed to measure and control the quality of a product or service that meets the stated needs of users.

(62) "Quality control limit" means the acceptance criteria used to evaluate quality control samples. Quality control limits may be those published by the department, referenced in a method or calculated by a laboratory.

(63) "Quality system" means a structured and documented management arrangement describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products, and services.

(64) "Raw data" means any original information from a measurement activity or study recorded in media that allows the reconstruction and evaluation of the activity or study. Raw data include absorbance, emission counts, area counts, peak heights, abundance, and millivolts. Raw data may be stored in hard copy or electronically.

(65) "Reagent water" means water which has been treated to remove any impurities that may affect the quality of an analysis.

(66) "Reference material" means a material that has one or more sufficiently well-established properties that can be used for calibrating or verifying the calibration of support equipment or analytical instruments.

(67) "Registration" or "registered" means registration under s. 299.11 (8), Stats., of laboratories that perform tests solely on its own behalf or that of a subsidiary under common ownership or control in accordance with the standards and requirements of this chapter.

(68) "Relative standard error" or "RSE" means the standard error divided by the mean for a set of calibration data and expressed as a percentage. The RSE is calculated according to the following formula:

$$RSE = 100 \times \sqrt{\sum_{i=1}^{n}\left[\frac{x_i' - x_i}{x_i}\right]^2 \Big/ (n-p)}$$

x_i = true amount of analyte in calibration level *i*, in mass or concentration units.

x'_i = measured amount of analyte in calibration level *i*, in mass or concentration units.

p = number of terms in the fitting equation.

Note: average = 1, linear = 2, quadratic = 3, cubic = 4

n = number of calibration points.

(69) "RV" means relative value.

(70) "Relocation" means a move by a laboratory resulting in a change in the laboratory's physical address.

(71) "Replicate" means two or more substantially equal aliquots analyzed independently for the same analyte.

(**72**) "Residual" means the difference, expressed as a percent, between the theoretical concentration of a calibration standard and the value derived from the calibration function from the measured response of the calibration standard.

(73) "Results" means the quantitative or qualitative output of an analysis, including measurements, determinations, and information obtained or derived from tests.

(74) "Revocation" means cancellation of a laboratory's accreditation.

(75) "Second source standard" means a standard procured from a supplier or manufacturer different from the supplier or manufacturer of a laboratory's calibration standards, or a standard obtained from the same supplier or manufacturer of a laboratory's calibration standards from a lot verifiably different from the lot of the calibration standards.

(76) "Sensitivity" means the capability of a method or instrument to discriminate between measurement responses representing different levels of analyte, or the capability of a method or instrument to detect an analyte at or greater than a stated quantity.

(77) "Signature" means the name of a person written by that person, or a distinctive mark or characteristic indicating the identity of that person provided in hard copy or electronically.

(78) "Subcontract" means the act of procuring analytical services from a certified laboratory.

Note: Registered laboratories can only do testing for its own facility. Another facility, under the same ownership, can procure analytical services from a registered laboratory.

(79) "Support equipment" means devices that may not be analytical instruments, but that are necessary to support laboratory tests and operations. "Support equipment" includes autoclaves, balances, ovens, refrigerators, freezers, incubators, water baths, temperature measuring devices, sample preparation devices, and volumetric dispensing devices when quantitative results depend on the accuracy of the support equipment.

(80) "Surrogate" means a substance unlikely to be found in environmental samples, with properties similar to those of analytes of interest, which is used to evaluate the bias of an analysis in the fortified sample.

(81) "Suspension" means a temporary cancellation of a laboratory's certification that may not require an on-site evaluation for reinstatement.

(82) "Temperature blank" means a sample container, of at least 40 mL capacity, filled with water and transported with each shipment of collected samples to determine the temperature of other samples in the shipment on arrival at a laboratory.

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

(84) "VOC" means volatile organic compounds.

(85) "X-intercept" means the point at which the plot of the calibration function crosses the x-axis.

NR 149.04 Disclaimers. (1) A laboratory may not claim or imply that data it generates has department approval solely on the basis of the laboratory's accreditation status.

(2) Accreditation of a laboratory is not an endorsement by the department of the quality or validity of the data generated by a laboratory.

(3) Accreditation does not guarantee the usability of data generated by a laboratory for an intended purpose.

(4) The covered programs under this chapter are the ultimate users of laboratory results and the covered programs shall determine to accept or reject analytical data from any accredited laboratory.

SUBCHAPTER II - PROGRAM ADMINISTRATION

NR 149.05 Required accreditation. (1) All laboratories submitting data to the department for a covered program, or generating data to determine compliance with a covered program, shall be accredited under this chapter for the fields of accreditation corresponding to the submitted or generated data, unless this chapter or a covered program exempts a test from requiring accreditation.

(2) The department may not accept data from a laboratory that is not properly accredited under this chapter, except as provided in s. NR 149.11.

(3) The department may initiate enforcement action against a laboratory which maintains accreditations under this chapter, but performs testing for analytes which it does not hold the appropriate accreditation, when that data will be reported to the department.

(4) A laboratory may not transfer its accreditation to any other entity unless the department expressly approves the transfer.

NR 149.06 Certificates. (1) The department shall issue certificates to accredited laboratories indicating or making reference to the specific fields of accreditation for which laboratories have been granted accreditation. The department shall issue certificates annually and whenever the fields for which a laboratory is accredited change, and when a laboratory relocates or changes its name.

(2) (a) The department shall issue certificates to the owner or legally responsible party of a laboratory.

(b) The department may not issue certificates to a contractor of a laboratory who is not the owner or legally responsible party of a laboratory.

(c) The department may indicate in a certificate that a laboratory is managed by an outside contractor.

(3) Certificates are the property of the department and shall be returned to the department upon request.

(4) A laboratory may not alter or modify certificates issued by the department. A laboratory that alters or modifies a certificate, or that misrepresents the fields of accreditation contained or referenced in a certificate, may be subject to revocation of all of its accreditations.

NR 149.08 Recognition of other certifications, registrations, accreditations, licenses, or approvals. (1) AGRICULTURE, TRADE, AND CONSUMER PROTECTION AGREEMENT. The department shall recognize the certification, registration, accreditation, licensure, or approval by the department of agriculture, trade, and consumer protection for microbiological testing performed by a laboratory submitting or generating data for a covered program.

(2) LABORATORIES CERTIFIED, REGISTERED, ACCREDITED, LICENSED, OR APPROVED BY OTHER GOVERNMENTS.

(a) The department may negotiate with and attempt to enter into agreements with federal agencies and agencies of other states to reciprocally recognize laboratories under this chapter.

(b) The department may recognize the certification, registration, accreditation, licensure, or approval of a laboratory by another state or an agency of the federal government if the standards used for the qualification of a laboratory are substantially equivalent to those established in this chapter.

(c) The department may not recognize the certification, registration, accreditation, licensure, or approval of a laboratory by another state or an agency of the federal government, unless that state or federal agency recognizes laboratories under this chapter.

(3) PRIVATE ORGANIZATION AGREEMENTS.

(a) The department may enter into agreements with private not for profit organizations to recognize laboratories under this chapter.

(b) The department may recognize the certification, registration, accreditation, licensure, or approval of a laboratory by a private not for profit organization if the organization's standards used for the qualification of a laboratory are substantially equivalent to those established in this chapter.

NR 149.09 Certification standards review council. (1) The council shall advise the department on the standards used to certify, register, suspend, and revoke laboratories.

(2) The council shall advise the department on training and outreach activities that the department may offer or sponsor to facilitate compliance of laboratories with this chapter**.**

(3) The department shall prepare annually all of the following for review by the council:

(a) A summary of laboratory evaluations performed. The council shall advise the department on the frequency and scope of evaluations necessary to determine compliance of laboratories with this chapter.

(b) A list of required PT samples and available proficiency testing sample providers. The department shall seek the advice of the council before requiring the analysis of additional PT samples and approving proficiency testing sample providers.

(c) A summary of fees scheduled to be assessed to laboratories. The department shall seek the advice of the council before implementing changes in the fees assessed to laboratories.

(d) A summary of variances issued. Subject to the requirements outlined in s. NR 149.12 (3) the department shall seek the advice of the council in granting variances.

NR 149.10 Enforcement. (1) ADMINISTRATIVE PROCEDURES. A laboratory's accreditation is valid until it expires, is suspended, or is revoked. If, after opportunity for a contested case hearing, the department finds that an accredited laboratory materially and consistently failed to comply with the provisions of this chapter, the department may suspend or revoke a laboratory's accreditation in whole or in part by matrix, analytical technology, method, analyte, or analyte group. Contested case hearings for out-of-state laboratories regulated under this chapter shall be held in Madison, Wisconsin.

(2) SUSPENSION OR REVOCATION OF CERTIFIED LABORATORIES.

(a) Causes for suspension of certification include any of the following:

1. Material and consistent failure to comply with the requirements of this chapter.

2. Reporting data to the department after a laboratory is deemed temporarily incapable of performing analysis in any matrix, analytical technology, method, analyte, or analyte group.

3. Suspension of certification, accreditation, license, or approval by another state or agency of the federal government for which the laboratory holds certification if the grounds for suspension are substantially equivalent to any of those listed in this paragraph.

(b) Causes for revocation of certification include any of the following:

1. Material and consistent failure to maintain records as required in this chapter.

2. Failure to allow the department to perform on site evaluations as specified in subch. VI.

3. Material and consistent failure to comply with the requirements of this chapter.

4. Material and consistent failure to submit requested records to the department.

5. Material and consistent failure to follow specified procedural or quality control requirements prescribed in methods.

6. Falsification of analytical results, testing dates, or any other information submitted to the department by the laboratory. Falsification includes alteration or modification of a certificate.

7. Failure of two consecutive PT samples for any method and analyte or analyte group combination for laboratories holding certification in the drinking water matrix.

8. Revocation of certification, registration, accreditation, license, or approval by another state or agency of the federal government for which the laboratory holds certification if the grounds for revocation are substantially equivalent to any of those listed in this paragraph.

(3) REVOCATION OF REGISTERED LABORATORIES. Causes for revocation of registration include any of the following:

(a) Falsification of analytical results, testing dates, or any other information submitted to the department by the laboratory. Falsification includes alteration or modification of a certificate.

(b) Material and consistent failure to maintain records as required in this chapter.

(c) Material and consistent failure to comply with the requirements of this chapter.

(d) Material and consistent failure to submit requested records to the department.

(e) Material and consistent failure to follow specified procedural or quality control requirements prescribed in approved methods.

(4) PROCEDURE FOR SUSPENSION OR REVOCATION OF ACCREDITATION.

(a) An order suspending or revoking accreditation shall be mailed to the laboratory and shall state the reasons for suspension or revocation. The order shall include the conditions under which reapplication will be accepted. For orders suspending accreditation, the order may include a timetable for correcting the deficiencies that led to the suspension. For orders revoking accreditation, the department may set a time period for the revocation.

(b) An order suspending or revoking an accreditation shall take effect on the 30th day after the order is mailed, unless the owner of an accredited laboratory submits a petition for a hearing. Petitions for a hearing shall be submitted to the

department within 30 days of receiving the order. The petition for hearing shall specify the findings or conclusions, or both, that the laboratory disputes and conform to the requirements of s. NR 2.05 (5).

(c) If a request for a hearing is submitted and meets the requirements of s. 227.42, Stats., the suspension or revocation shall be stayed and the department shall conduct a contested case hearing on the matter. At least ten days prior to the date of the hearing, the department shall send a written notice to the laboratory indicating the date, time, and location of the hearing. The final determination of the department, including the basis for the decision, shall be provided by written order to the laboratory after the hearing.

Note: Refer to ch. NR 2 for additional information on the contested hearing process.

(d) The final determination of the department is subject to review under ch. 227, Stats.

(5) REAPPLICATION FOLLOWING SUSPENSION OR REVOCATION.

(a) A laboratory that has had its accreditation suspended may reapply for accreditation if all of the following are met:

1. The deficiencies that led to the suspension have been corrected in accordance with the timetable contained in the order.

2. Any conditions for reapplication specified in the order have been met.

(b) A laboratory that has had its accreditation revoked may reapply for accreditation if all of the following have been met:

1. The deficiencies that led to the revocation have been corrected.

2. Conditions contained in the order have been satisfied.

3. The time period for which the revocation is in effect has expired.

(c) Laboratories reapplying for accreditation following suspension or revocation shall submit an initial application as identified in s. NR 149.14 (1) and (2).

(6) REFERRAL.

(a) Any violation of this chapter may be referred to the attorney general's office for enforcement under ss. 299.95 and 299.97, Stats.

(b) Any laboratory operating without proper accreditation for which analysis results are submitted to the department for compliance monitoring or for analyses that require certification or registration under any covered program may be referred by the department to the attorney general's office for enforcement.

NR 149.11 Discretionary acceptance. (1) Except for results of tests required under chs. NR 809 and 812 the department may accept, on a case-by-case basis, the results of tests originating in a laboratory not accredited as required by a covered program if the results meet all other requirements of this chapter.

(2) Accreditation required under this chapter may be waived by the department when there is a multi-agency response to a hazardous substance discharged in boundary areas of the state.

(3) Accreditation required under this chapter may be waived by the department when the environmental protection agency national enforcement investigations center laboratory is utilized for EPA or department led enforcement cases.

(4) The department may not accept the results of tests originating in a laboratory not accredited, unless the results are generated in accordance with requirements substantially equivalent to those outlined in this chapter.

Note: Refer to s. NR 149.42 for additional information on the use of alternative methods.

(5) The department may charge a fee under s. 299.11 (5) (d), Stats., if it is necessary to verify the results of tests for which a laboratory requests discretionary acceptance.

NR 149.12 Variances. (1) GENERAL. The department may approve variances from non-statutory requirements of this chapter when the department determines that the variances have no effect on the department's objectives. Before granting variances, the department shall take into account factors such as good cause, circumstances beyond the control of the laboratory, and financial hardship.

(2) REQUEST FOR VARIANCE. Requests for variances shall be submitted to the department. Each variance request shall contain all of the following:

(a) The name of the applicant or laboratory.

(b)The section of this chapter from which a variance is sought.

(c) A description of the circumstances under which the variance will be exercised, including any pertinent background information relevant to making a determination of justification.

(3) APPROVAL OF VARIANCE. The department shall approve or deny the requested variance to the applicant within 60 days of receiving all the information referenced in sub. (2). If the request is denied, the department shall state the reasons for the denial.

(4) REPEAL OF VARIANCES. The department reserves the right to repeal any variances previously granted. Once the department notifies the laboratory of the repeal, the laboratory will have six months before the repeal is effective.

SUBCHAPTER III - PROGRAM STRUCTURE

NR 149.13 Fields of accreditation (certification and registration). (1) GENERAL. The department shall certify and register laboratories by specific fields of accreditation. Accreditation shall be by certification under s. 299.11 (7), Stats., or registration under s. 299.11 (8). Fields of accreditation consist of 3 tiers describing the analytical capability of laboratories.

(2) TIER 1 – MATRIX. The first tier of accreditation is comprised of aqueous, non-aqueous, and drinking water matrices.

Note: Biosolids and sludges are a non-aqueous matrix for accreditation purposes.

(3) TIER 2 – TECHNOLOGY OR METHOD. The second tier of accreditation is comprised of analytical technologies for aqueous and non-aqueous matrices or methods for the drinking water matrix.

(a) The department may certify or register laboratories that analyze aqueous and non-aqueous matrices for the analytical technologies contained in this section, Table 1.

(b) The department shall include any associated sample preparation techniques, such as digestions, distillations, extractions, cleanups, concentrations, and dilutions as part of the certification or registration for a given field of accreditation.

(c) Laboratories may employ multiple methods of analysis for a given analytical technology under the same field of accreditation.

Table 1 - Analytical Technologies for Aqueous and Non-aqueous Matrices

Number	Analytical Technology
	General Chemistry

1.	Oxygen Demand assays (BOD or cBOD)[1]
2.	Colorimetric or Turbidimetric
3.	Electrometric Assays (i.e. ion-selective electrode)
4.	Gravimetric Assays – Residue (solids)
5.	Extraction/Gravimetric Assays – Oil & Grease as Hexane Extractable Materials (HEM)[1]
6.	Titrimetric or Potentiometric Titration Assays
7.	Flow Injection - Gas Diffusion – Amperometry[1]
8.	NonDispersive Infrared (NDIR) or Microcoulometry
9.	Ion Chromatography (IC)
	Metals
10.	Flame Atomic Absorption Spectrophotometry (FLAA)
11.	Flame Photometry Spectrophotometry (FP)
12.	Gaseous Hydride Atomic Absorption Spectrophotometry
13.	Graphite Furnace Atomic Absorption Spectrophotometry (GFAA)
14.	Cold Vapor Atomic Absorption Spectrophotometry (CVAA)
15.	Cold Vapor Atomic Fluorescence Spectrophotometry (CVAFS)
16.	Thermal Decomposition Atomic Absorption Spectrophotometry (TDAA)
17.	Inductively Coupled Plasma Emission Spectrophotometry (ICP)
18.	Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)
	Organics
19.	Gas Chromatography (GC)
20.	Gas Chromatography-Mass Spectrometry (GC/MS)
21.	Liquid Chromatography (LC)
22.	Liquid Chromatography-Mass Spectrometry (LC/MS)
23.	High Resolution Gas Chromatography-Mass Spectrometry (HRGC/MS)
	Other
24.	Hazardous Waste Characteristics[2]
25.	Solid Waste Leaching Procedures[2]
26.	Whole Effluent Toxicity Assays[1]
27.	Other[3]

1. Accreditation for this technology is only available for the aqueous matrix (Tier 1).

2. Accreditation for this technology is only available for the non-aqueous matrix (Tier 1).

3. The department may offer accreditation in other analytical technologies if the technology is approved by the EPA or is approved by the department as an emerging technology.

(d) The department may certify laboratories analyzing drinking water samples using methods promulgated or approved by the EPA under 40 CFR, Part 141.

(4) TIER 3 – ANALYTES OR ANALYTE GROUP. The third tier of the accreditation is comprised of analytes or analyte groups. The department may certify or register laboratories by analyte groups if it improves the efficiency of administering accreditations.

(a) The analytes and analyte groups available for accreditation under this subsection are contained in Appendix I.

(b) The department may offer accreditation for additional analytes or analyte groups that are not contained in Appendix I upon request by a covered program or when the EPA requires the additional analytes or analyte group analysis, after consultation with the council.

(c) For aqueous and non-aqueous matrices, the analytes and analyte groups are organized into classes. Laboratories analyzing aqueous and non-aqueous matrices may be accredited for analytes and analyte groups belonging to the analytical classes contained in this section, Table 2.

Table 2 - Analytical Classes for Aqueous and Non-aqueous Matrices

Number	Analytical Classes
1.	General Chemistry
2.	Metals
3.	Volatile Organic Compounds
4.	Base, Neutral, and Acid Extractable Semivolatile Compounds, including: a. Aldehydes and Ketones b. Benzidines c. Chlorinated Hydrocarbons d. Explosive Residues e. Haloethers f. Nitroaromatics g. Nitrosamines h. Non-halogenated Organics i. Phenols j. Phthalates k. Polynuclear aromatic hydrocarbons
5.	Polynuclear Aromatic Hydrocarbons
6.	Pesticides and metabolites, including: a. Acid b. Nitrogen c. Carbamate d. Organochlorine e. Organophosphorus f. Triazine g. Other
7.	Persistent Organic Pollutants
8.	Hazardous Waste Characteristics[1]
9.	Leaching Procedures[1,2]
10.	Solvent Scans
11.	Toxicity, Acute
12.	Toxicity, Chronic

1. Hazardous Waste Characteristics and Leaching Procedures are only offered for non-aqueous matrices (Tier 1).

2. Leaching Procedures require that laboratories also maintain accreditation for any analyte to be determined in the resulting leachate.

(d) For the drinking water matrix, the analytes and analyte groups are organized into classes. Laboratories analyzing drinking water may be certified for analytes or analyte groups belonging to the analytical classes contained in this section, Table 3.

Table 3 - Analytical Classes for the Drinking Water Matrix

Number	Analytical Classes
1.	Disinfection By-products
2.	Primary Inorganic Contaminants (Non-Metals)
3.	Primary Inorganic Contaminants (Metals)
4.	Secondary Contaminants (Non-Metals)
5.	Secondary Contaminants (Metals)
6.	Synthetic Organic Contaminants (SOC) – Dioxin
7.	Synthetic Organic Contaminants (SOC) – Organochlorine Pesticides
8.	Synthetic Organic Contaminants (SOC) – Nitrogen-Phosphorus Pesticides
9.	Synthetic Organic Contaminants (SOC) – Herbicides
10.	Synthetic Organic Contaminants (SOC) – Miscellaneous
11.	Volatile Organic Compounds (VOC)

SUBCHAPTER IV – Accreditation Process

NR 149.14 Application for accreditation. (1) GENERAL REQUIREMENTS.

(a) The accreditation process requires laboratories to do all of the following:

1. Submit applications to seek, revise, or transfer accreditations.

2. Declare the fields of accreditation being sought, revised, or transferred in corresponding applications.

3. For drinking water, declare the methods of analysis for analytes and analyte groups in the fields of accreditation being sought, revised, or transferred.

4. Submit a current analytical instrument list.

5. Submit acceptable results for PT samples when the department requires the PT sample analysis.

6. For laboratories that are not physically located in Wisconsin, submit a statement of intent to perform analyses for regulatory samples originating in Wisconsin. Intent to perform analyses for regulatory samples originating in Wisconsin can be manifested by any of the following:

a. Referencing the affiliation of the applicant laboratory with a plant, office, laboratory, or engineering firm physically located in the state of Wisconsin.

b. Submitting a letter from a potential client requesting the applicant to perform analyses to determine compliance with a covered program.

7. Submit any information identified in an application or upon request of the department.

8. When the department determines that an evaluation is necessary to determine potential or actual compliance with this chapter, allow the department to perform an on-site evaluation.

9. Remit any necessary fees required under this chapter.

Note: Fee information is contained in s. NR 149.21 Tables 1, 2, and 3.

10. Agree to comply with this chapter by virtue of signing the application.

(b) The department may not accept applications from a laboratory to which any of the following apply:

1. The laboratory has been issued a notice of violation for nonconformance with this chapter if the nonconformance has not been corrected.

2. The laboratory has been issued an administrative order of suspension or revocation for a violation of this chapter when the violation has not been corrected and the suspension or revocation period specified in an order has not elapsed.

3. The laboratory was not in compliance with this chapter at the time the laboratory voluntarily relinquished its accreditations, nonconformance's existing prior to relinquishing the accreditations have not been resolved, and at least 6 months have not elapsed since the voluntary action was undertaken.

(d) The department shall void any application from a laboratory that has not submitted all the information and materials required as part of the application, or subsequent audit process, within a year of the receipt of the application form.

(e) The department may require the submittal of additional information necessary to determine a laboratory's actual or potential compliance with the provisions of this chapter.

(2) INITIAL APPLICATIONS.

(a) A laboratory seeking direct accreditation by the department, that has never been accredited under this chapter, that has let its entire accreditation lapse for more than one year, or that has voluntarily relinquished all its accreditations shall submit an initial application to become accredited.

(b) A laboratory seeking reinstatement of its accreditations, following a suspension or revocation, shall submit an initial application for the desired accreditations.

(3) REVISED APPLICATIONS.

(a) A laboratory holding valid accreditations shall submit a revised application to seek additional accreditations in any of the following:

1. Matrices.

2. Technologies for an accredited matrix.

3. Analytes or analyte groups within an accredited analytical technology.

4. Analyte-method combinations for the drinking water matrix.

(b) A laboratory seeking reinstatement of accreditations within a year after failing to renew those accreditations shall submit a revised application for the desired accreditations.

(c) A laboratory seeking to convert a valid certification into a registration or a registration into a certification shall submit a revised application to effect the conversion.

(4) APPLICATIONS FOR ACCREDITATIONS THROUGH RECIPROCAL AGREEMENT RECOGNITION.

(a) A laboratory holding valid certifications, registrations, accreditations, licenses, or approvals from government bodies or private organizations, with which the department has established a reciprocal agreement, may have its certifications, registrations, accreditations, licenses, or approvals considered for recognition by the department by submitting a reciprocity application.

(b) A laboratory applying for recognition by the department under an existing reciprocal agreement shall submit certificates or official documents of the laboratory's certifications, registrations, accreditations, licenses, or approvals with its application.

(c) A laboratory applying for recognition by the department under an existing reciprocal agreement shall agree to notify the department of any changes, within 30 days of a change in its certification, registration, accreditation, licensure, or approval status with the entity with which the department has the agreement.

(d) A laboratory applying for recognition by the department under an existing reciprocal agreement shall submit a copy of the report of the most recent on-site evaluation performed by the entity with which the department has the agreement.

(5) ISSUANCE OF ACCREDITATIONS.

(a) The department shall issue accreditations to laboratories through certificates that meet the criteria specified in s. NR 149.06.

(b) The department shall issue a certificate to a laboratory submitting an initial, revised, or reciprocity application for accreditation within 30 days of the date by which the laboratory successfully completes an on-site evaluation, or the date by which the department waives an on-site evaluation, subject to all of the following:

1. The department may not schedule or waive an on-site evaluation of an applicant laboratory until all the requirements of sub. (1) have been completed.

2. A laboratory completes an on-site evaluation successfully when it addresses, to the department's satisfaction, any deficiencies encountered during the on-site evaluation.

(c) Following an on-site evaluation, the department may issue accreditations**,** on a case-by-case basis, that are unaffected by any deficiencies encountered during the on-site evaluation.

(d) The department shall issue a revised certificate of accreditation to an accredited laboratory within 30 days of the occurrence of any of the following:

1. Receiving notification from that laboratory that it is changing its name without changing ownership.

2. Approval of relocation to a new facility that does not compromise the laboratory's ability to meet the requirements of this chapter.

NR 149.15 Period, renewal, and expiration of accreditation. (1) ACCREDITATION PERIOD.

(a) The accreditation period shall commence on September 1 and end on August 31 of the following year for all laboratories accredited by the department.

(b) The department shall renew the accreditations of laboratories that meet the requirements of this section prior to September 1 of each year.

(2) RENEWAL PROCESS. Annually, each laboratory holding valid accreditations under this chapter and wishing to renew its accreditations shall do all of the following:

(a) Pay the required annual renewal fee and any assessed administrative fees prior to July 1. After July 1, a late renewal fee may be assessed to laboratories that have not paid all requisite fees. A laboratory is not eligible for renewal of accreditation if full payment is not received prior to September 1.

(b) Submit acceptable PT sample results as required in subch. V, no later than August 31.

(c) If accredited via reciprocal agreement, submit documentation of accreditations and a copy of the most recent on-site evaluation report from the entity with which the department has the agreement.

(3) EXPIRATION OF ACCREDITATIONS. The department shall void on September 1 of each year the affected accreditations of laboratories failing to provide the information and fees specified in sub. (2).

(4) VOLUNTARY WITHDRAWAL OF ACCREDITATIONS. Laboratories may voluntarily withdraw accreditations at any time by notifying the department in writing.

Note: Conditions associated with applying for analytes for which accreditation was voluntarily withdrawn are provided in s. NR 149.14 (1) (c) (3).

NR 149.155 Required Notifications

(1) LABORATORY NAME CHANGE. A laboratory that changes its name without changing ownership shall notify the department, in writing, within 30 days of the effective date of the name change. The department may not charge a fee for any processing resulting solely from a name change.

(2) LABORATORY OWNERSHIP CHANGE. A laboratory that changes its ownership shall notify the department, in writing, within 30 days of the effective date of the ownership change. Notification shall be in the form of a completed application for transfer of ownership.

(3) LABORATORY RELOCATION. A laboratory relocating shall notify the department, in writing, at least 30 days prior to the relocation. Notification shall include the new address and any changes in contact information.

(4) KEY PERSONNEL CHANGES. A laboratory making changes to key personnel, including lab director, lab manager, quality assurance manager, or whole effluent toxicity technical expert, however titled, shall notify the department within 30 days of these changes.

NR 149.18 Subcontracting. (1) Subcontracting samples, for testing under a covered program, shall be to a laboratory that holds valid certifications for the fields of accreditation requested.

(2) A laboratory accepting samples under a subcontract from another laboratory shall maintain any analytical records needed to determine compliance with this chapter. The records shall be made available to the laboratory providing the samples.

NR 149.19 Requirements for certification in the drinking water matrix. (1) This section contains additional requirements that apply to laboratories analyzing drinking water for compliance under chs. NR 809 and 812.

(2) GENERAL REQUIREMENTS.

(a) The minimum criteria and procedures for certification in the drinking water matrix are specified in the following documents:

1. The "Manual for the Certification of Laboratories Analyzing Drinking Water," EPA815-R-05-004, fifth edition, EPA, Office of Ground Water and Drinking Water, January 2005.

2. "Supplement 1 to the Fifth Edition of the Manual for the Certification of Laboratories Analyzing Drinking Water," EPA 815-F-08-006 EPA, Office of Ground Water and Drinking Water, June 2008.

Note: The documents above can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(b) The department may not grant either interim or provisional certifications.

(c) A laboratory shall follow any additional criteria and procedures identified in this chapter applying to drinking water analyses.

(3) REQUIREMENTS FOR INORGANIC CONTAMINANTS.

(a) To receive certification to conduct analyses of inorganic contaminants, the laboratory shall achieve the MDLs specified in 40 CFR 141.23 (a) (4) (i), 40 CFR 141.89 (a) (1) (iii), monitoring trigger limits provided by the EPA, or 10% of the MCL, for contaminants having an MCL, whichever is greater, for each method of analysis.

Note: The EPA monitoring trigger limits can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(b) Each laboratory shall successfully analyze at least one PT sample annually according to criteria specified in 40 CFR 141.23 (k)(3)(ii).

(4) REQUIREMENTS FOR VINYL CHLORIDE.

(a) To receive certification to conduct analyses of vinyl chloride, the laboratory shall achieve a MDL of 0.0003 mg/L for each method of analysis.

(b) Each laboratory shall successfully analyze at least one PT sample annually according to criteria specified in 40 CFR 141.24 (f)(17)(ii)(B). Vinyl chloride is evaluated separately from the other regulated VOC, and certification for the regulated VOC requires successful analysis of vinyl chloride in addition to requirements for the other regulated VOC.

(5) REQUIREMENTS FOR OTHER VOC.

(a) To receive certification to conduct analyses of VOC, excluding vinyl chloride, the laboratory shall achieve MDLs of 0.0005 mg/L for all regulated compounds for each method of analysis.

(b) Each laboratory shall successfully analyze at least one PT sample annually according to criteria specified in 40 CFR 141.24 (f)(17)(i)(C) and (D). Excluding vinyl chloride, a laboratory may be certified for all VOC if the laboratory successfully analyzes at least 80% of the regulated VOC. The department may not renew the accreditation for analytes which it repeatedly fails during a certification year.

Note: Some proficiency testing sample providers include the trihalomethanes in the sample for regulated VOC. Trihalomethanes are not considered part of the "80%" rule. To be accredited for the regulated VOC, a laboratory shall pass vinyl chloride and pass 16 of the remaining 20 regulated VOC analytes in each PT sample.

(6) REQUIREMENTS FOR SYNTHETIC ORGANIC CONTAMINANTS.

(a) To receive certification to conduct analyses of synthetic organic contaminants, the laboratory shall achieve the MDLs specified in 40 CFR 141.24 (h) (18), monitoring trigger limits provided by the EPA, or 10% of the MCL, whichever is greater.

Note: The EPA monitoring trigger limits can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(b) Each laboratory shall successfully analyze at least one PT sample annually according to criteria specified in 40 CFR 141.24 (h)(19)(i)(A) and (B).

(7) REQUIREMENTS FOR DISINFECTION BYPRODUCTS.

(a) To receive certification to conduct analyses of disinfection by-products, the laboratory shall achieve the MDLs specified in 40 CFR 141.24 (h) (18), monitoring trigger limits provided by the EPA, or 10% of the MCL, whichever is greater. To receive certification to conduct analyses of trihalomethanes, the laboratory shall achieve MDLs of 0.0005 mg/L for each regulated analyte for each method of analysis.

Note: The EPA monitoring trigger limits can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(b) For the haloacetic acid and trihalomethane PT samples, laboratories shall pass 80%, or 4 of the analytes present in each PT sample.

Note: These requirements are provided in 40 CFR 141.131(b)(2)(iii).

(8) CERTIFICATION EXEMPTIONS. Certification is not required to perform any of the following analyses:

(a) Fluoride analysis required under ch. NR 809.74.

(b) Analysis for free chlorine residual and total chlorine residual required under s. NR 809.74.

Note: Additional requirements for public water systems which chlorinate or fluoridate water are found in NR 809.74.

(c) Analysis for pH required under s. NR 809.548.

Note: Additional monitoring requirements for water quality analytes are found in NR 809.548.

(d) Analysis for turbidity required under s. NR 809.113.

Note: Additional sample collection and analytical requirements for inorganic contaminants are found in NR 809.113.

(9) NOTIFICATION TO AFFECTED WATER SUPPLY FACILITIES. MCL exceedances for any regulated analyte associated with ch. NR 809 compliance monitoring shall be reported by the laboratory to the affected water supply facility within 48 hours of completing sample results.

NR 149.20 Requirements for accreditation in the whole effluent toxicity analyte class. All of the following apply to laboratories accredited to perform whole effluent toxicity testing:

(1) ACUTE AND CHRONIC WHOLE EFFLUENT TOXICITY TESTING BY SPECIES. Laboratories analyzing whole effluents for acute and chronic toxicity for a given species shall follow the quality control requirements referenced in the "State of Wisconsin Aquatic Life Toxicity Testing Methods Manual."

Note: The methods of analysis for determining the toxicity of effluents are referenced in the "State of Wisconsin Aquatic Life Toxicity Testing Methods Manual," which can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(2) ACCREDITATION REQUIREMENTS FOR CHEMICAL TESTING IN SUPPORT OF WHOLE EFFLUENT TOXICITY TESTING. Water chemistry testing performed in support of whole effluent toxicity testing for ammonia, alkalinity, hardness, pH, dissolved oxygen, conductivity, and total residual chlorine do not require separate accreditation under this chapter.

NR 149.21 Fees. (1) The department shall establish a schedule of fees for laboratories participating in the laboratory accreditation program. These costs include those associated with laboratory evaluations, discretionary acceptance of data, reciprocity, training, and collection of fees. Fees may not be prorated and, except for overpayment, are not refundable.

(2) TOTAL FEE INCOME.

(a) The laboratory accreditation program's total fee income shall be designed to generate revenues equal to the costs of administering this chapter. Any amendments to the formulas in this subsection shall be reviewed by the council prior to being proposed as rule amendments.

(b) The department may adjust the fee schedule according to the formulas in this subsection and the relative value unit items specified in Tables 1, 2, and 3. Annual fee adjustments shall be reviewed by the council and approved annually by the natural resources board.

(c) The following formulas shall be used to generate and adjust the laboratory accreditation program's fee schedule:

1. Fee Revenue Required = Projected Laboratory Accreditation Program Expenses - (Application Fees + Travel Reimbursement)

a. Fee Revenue Required is the total amount of revenue which shall be collected via fees in order to cover all laboratory accreditation program costs.

b. "Laboratory Accreditation Program Expenses" is the sum of all anticipated laboratory accreditation program expenses including salary, fringes, evaluation travel costs, supplies, and services. This includes travel costs for evaluation of out-of-state labs which are required to reimburse the laboratory accreditation program for laboratory evaluation travel costs. Application Fee revenues are excluded from the Fee Revenue required because the application fee revenues are variable and collected independently throughout an accreditation period.

Note: "Laboratory accreditation program expenses" may not exceed the legislature's approved spending authority for the laboratory accreditation program in a given fiscal year. The department of administration approved spending authority is given in s. 20.370 (3) (fj), Stats., and may be revised by the department of administration to recover laboratory accreditation program cost.

c. Application Fees is a three year moving average of application fees received for the three most recent fiscal years.

d. Travel Reimbursement is a three year moving average of out−of−state travel reimbursements for the three most recent fiscal years. Laboratory accreditation program costs related to travel for out-of-state audits are negated because the department recovers these costs directly from each lab.

Note: For example, given the following,
Projected Laboratory Accreditation Program Expenses = $612,121
Application Fees (three year average) = $31,681
Travel Reimbursement (three year average) = $17,079
Fee Revenue Required would be $612,121 - ($31,681 + $17,079) = $563,361

2. Total # RV Units = $\sum$ [(#Laboratories in Item) x (RV of Item)].

a. Total # RV Units is the total number of RV units available for the fiscal year. It is the mechanism by which fees are distributed to individual laboratories.

b. "#Laboratories in item" is a count of how many laboratories will be assessed the fee for that item for a given fiscal year, based on accreditations currently held.

c. The RV units for each fee item, "RV of item," are listed in Table 3. The total number of RV units is the sum of all base fee RV, matrix fee RV, and technology or class fee RV.

Note: For example, given the following,
Base RV: #Labs Registered (5 RV) = 225; #Labs Certified (10 RV) = 141;
Matrix RV = 341 Aqueous, 71 Solid and 43 Drinking water.
Technology/Class RV= 2612 Aqueous, 943 Solid and 575 Drinking water.
Base Fee RV Units = (225 x 5) + (141 x 10) = 2535
Matrix RV Units = (341+ 71+43) = 455 x 5 RV/Matrix = 2275
Technology/Class RV Units = (2612+ 943+575) = 4130 RV
Total # RV Units = 2535 + 2275 + 4130 = 8940 RV Units

3. Cost per RV = Fee Revenue Required / Total # RV Units. The Cost per RV is the dollar value assigned to one RV unit and is used to establish all fees for items in Table 3 of this section. The cost per RV is rounded to the nearest $0.50 to simplify fee statements.

Note: For example, given the following,
Fee Revenue Required = $563,361
Total # RV Units = 8940 RVU
Cost per RV ($/RV) = $563,361 / 8940 RVU = $63.01/RV Units; rounded to the nearest $0.50 = $63.00/RV Units

4. Laboratory fees = # RV units for a given laboratory x Cost per RV. The sum of base, matrix, technology, and class fees for a given laboratory is multiplied by the cost per RV to determine the fee for each laboratory. Any outstanding administrative fees may also be added.

Note: For example, given the following for Pinestump Wastewater Treatment Plant Laboratory,
Base RV: 5 (registered)
Matrix RV =5 (aqueous matrix only)
Technology/Class RV= 4 (Oxygen Demand Assays = 3 RV; Gravimetric Assays - Residue = 1 RVU).
Total # RV Units = 5 + 5 + 4 = 14 RV Units
Laboratory fee = 14 RV Units x $63.00/RV Units = $882.00

(3) ADMINISTRATIVE FEES. The department shall assess fees to recover the cost of specified administrative functions specified in this section, Table 1. Any outstanding administrative fees may be included as part of the annual fee.

Table 1 - Administrative Fees

Item	RV Units
Discretionary Acceptance (NR 149.11)	Actual Cost
Evaluation Cancellation [1]	Incurred Costs
Evaluation for Enforcement Follow-Up	Actual Cost
Evaluation of Out-of-State Laboratories	Travel Cost
Late Renewal Fee[2]	2

[1] Out-of-state laboratories may be required to reimburse the laboratory accreditation program for travel costs incurred by the cancellation or postponement of an evaluation, including airfare, hotel, and rental car expenses.

[2] Assessed 30 days after payment due date.

(4) APPLICATION FEES. (a) The department shall assess fees for all applications specified in this section, Table 2.

(b) The fee for an application also includes matrix and technology or class fees when a laboratory applies for a new matrix, technology, or class. The matrix fee is not required if a laboratory is applying for additional technologies (class) or analytes within a matrix for which the lab already holds accreditation. Technology (class) fees are not required if a laboratory already holds accreditation for that matrix and technology (or matrix and class, for drinking water) combination.

Note: Example – The application fee for a laboratory applying to add ammonia by colorimetry under the aqueous matrix is based on only the number of RV units for a revised application since the lab has already paid for the aqueous matrix and colorimetry technology as part of its renewal fees.

(c) Application fees are not refundable in either whole or part.

(d) If an application is not completed within a single fiscal year, the department may adjust the fees on the application to recover the difference in fees between the year the application was submitted and the year the application was completed. The laboratory shall pay this difference prior to receiving accreditations.

Table 2 - Application Fees

Item	RV Units
Initial Application	6
Revised Application	3
Reciprocity Application	4
Transfer of Ownership Application	4

(5) ANNUAL FEES. The department shall assess an annual fee to each laboratory holding accreditations under this chapter either directly or through recognition agreements. A laboratory's annual fee shall be the sum of all of the following:

(a) The base fee for accreditation. The department shall assess a base fee to all laboratories holding accreditations under this chapter. The number of RV units assigned to each type of base fee is specified in Table 3 of this subchapter.

(b) The matrix fee. The department shall assess a fee per matrix type to all accredited laboratories. The number of RV units assigned to each type of matrix fee is specified in this section, Table 3.

(c) 1. Analytical technology fees. The department shall assess a fee for each analytical technology, per matrix, to all accredited laboratories, in fields involving the aqueous and non-aqueous matrices. The assessed fee shall be based on the RV units specified in this section, Table 3.

2. Analytical class fees. The department shall assess a fee, per analytical class, to all certified laboratories in fields involving the drinking water matrix. The assessed fee shall be based on the RV units specified in this section, Table 3.

(d) Any outstanding administrative fees.

Table 3 - Annual Fees for Accreditation

	Item	RV Units
A.	**Administrative Fees**	
	Outstanding administrative fees	per Table 1 of this subchapter
B.	**Base Fees**	
	Base Fee, Certification	10
	Base Fee, Registration	5
C.	**Matrix Fees**	
	Matrix Fee, Aqueous	5
	Matrix Fee, Drinking Water	5

	Matrix Fee, Non-aqueous	5
D.	**Analytical Technology Fees for Aqueous and Non-aqueous Matrices**	
	General Chemistry	
	Oxygen Demand assays (BOD or cBOD)	3
	Colorimetric or Turbidimetric	2
	Electrometric Assays (i.e. ion-selective electrodes)	1
	Gravimetric Assays - Residues (solids)	1
	Extraction/Gravimetric Assays - Oil & Grease as Hexane Extractable Materials (HEM)	2
	Titrimetric or Potentiometric Titration Assays	1
	Flow Injection – Gas Diffusion – Amperometry	4
	NonDispersive Infrared (NDIR) or Microcoulometry	2
	Ion Chromatography (IC)	4
	Metals	
	Flame Atomic Absorption Spectrophotometry (FLAA)	2
	Flame Photometry Spectrophotometry (FP)	2
	Gaseous Hydride Atomic Absorption Spectrophotometry	3
	Graphite Furnace Atomic Absorption Spectrophotometry (GFAA)	3
	Cold Vapor Atomic Absorption Spectrophotometry (CVAA)	3
	Cold Vapor Atomic Fluorescence Spectrophotometry (CVAFS)	3
	Thermal Decomposition Atomic Absorption Spectrophotometry (TDAA)	3
	Inductively Coupled Plasma Emission Spectrophotometry (ICP)	4
	Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)	5
	Organics	
	Gas Chromatography (GC)	4
	Gas Chromatography-Mass Spectrometry (GC/MS)	5
	Liquid Chromatography (LC)	4
	Liquid Chromatography-Mass Spectrometry (LC/MS)	5
	High Resolution Gas Chromatography-Mass Spectrometry (HRGC/MS)	10
	Other	
	Hazardous Waste Characteristics	2
	Solid Waste Leaching Procedures	2
	Whole Effluent Toxicity Assays	5
	Other	Not to exceed 10[1]
E.	**Analytical Class Fees for Drinking Water Matrix**	
	Disinfection By-products	5
	Primary Inorganic Contaminants (Non-Metals)	3
	Primary Inorganic Contaminants (Metals)	6
	Secondary Contaminants (Non-Metals)	2
	Secondary Contaminants (Metals)	3
	Synthetic Organic Contaminants (SOC) – Dioxin	8
	Synthetic Organic Contaminants (SOC) – Organochlorine Pesticides	3
	Synthetic Organic Contaminants (SOC) – Nitrogen-Phosphorus Pesticides	3
	Synthetic Organic Contaminants (SOC) – Herbicides	3
	Synthetic Organic Contaminants (SOC) – Miscellaneous	4
	Volatile Organic Compounds (VOC)	4
	Other	Not to exceed 10[1]

[1] Actual cost will be determined by the department considering the complexity of the technology.

SUBCHAPTER V - PROFICIENCY TESTING

NR 149.22 Required proficiency testing samples and frequency of analysis. (1) REQUIREMENTS.

(a) A laboratory shall participate in at least one PT study per accreditation period as specified in sub. (2), subject to any of the following:

1. For aqueous and non-aqueous matrices, a laboratory shall analyze aqueous matrix PT samples for each combination of technology and analyte or analyte group in its fields of accreditation.

2. For the drinking water matrix, a laboratory shall analyze PT samples for each combination of method and analyte or analyte group in its fields of certification. Acceptance criteria for these samples are set in s. NR 149.27.

(b) PT samples may be those offered by approved proficiency testing sample providers at regular intervals, as PT "rapid response" samples, or as custom formulations approved by the department.

(c) A laboratory shall report a proper method code, which matches the technology and analyte or analyte group for which accreditation is held, with results for PT samples.

Note: A link to the universal list of method codes for methods and technologies is available from the NELAC Institute (TNI) which can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(2) LISTS OF REQUIRED PT SAMPLES AND APPROVED PROFICIENCY TESTING SAMPLE PROVIDERS.

(a) The department shall seek the advice of the council prior to identifying required PT samples and approved proficiency testing sample providers.

(b) The list shall identify matrix-specific PT samples required for submittal for renewal of accreditation, or with initial or revised applications and the specific proficiency testing sample providers approved for supplying each required PT sample.

Note: Lists of required PT testing samples and approved proficiency testing sample providers can be found on the Wisconsin department of natural resources laboratory accreditation program website.

NR 149.23 Approval of proficiency testing sample providers. (1) CRITERIA FOR APPROVAL.

(a) When evaluating a proficiency testing sample provider for approval, the department shall consider criteria including all of the following:

1. The proficiency testing sample provider accreditation status by nationally recognized accreditation programs.

2. The proficiency testing sample provider use of techniques for calculating acceptance limits as specified in s. NR 149.27.

(2) PROFICIENCY TESTING SAMPLE PROVIDER REQUIREMENTS. Approved proficiency testing sample providers shall submit all PT sample results to the department electronically, in a format specified by the department.

NR 149.24 Proficiency testing samples for applications and accreditation renewal. (1) PT ACCEPTANCE CRITERIA. The department may not grant or renew an accreditation unless the associated PT sample results meet the criteria specified in s. NR 149.27.

(2) PT STUDY CLOSE DATE. Acceptable PT samples shall have a PT study close date no more than six months prior to the date of application.

(3) PT DUE DATE FOR RENEWAL. For renewal of accreditations, which begin on September 1 of each calendar year, acceptable PT sample results shall have been reported electronically to the department by an approved proficiency

testing sample provider no sooner than January 1 or later than August 31 of the same calendar year. Preliminary reports from approved proficiency testing sample providers may not be used for renewal of accreditation.

Note: For example, to renew accreditation for any analyte effective for the period from September 1, 2009 to August 31, 2010, a laboratory shall have successfully analyzed a PT sample for that analyte reported between January 1 and August 31, 2009.

(4) PTs FOR APPLICATIONS. A laboratory submitting initial or revised applications for accreditation shall analyze PT samples from an approved proficiency testing sample provider and submit acceptable results for any of the following:

(a) For aqueous and non-aqueous matrices, acceptable PT results are required for each combination of technology and analyte or analyte group for which the department has identified that PT samples are required.

(b) For the drinking water matrix, acceptable PT results are required for each combination of method and analyte or analyte group.

(5) PTs FOR RENEWAL. A laboratory wishing to renew its accreditation shall analyze PT samples from an approved proficiency testing sample provider and submit acceptable results for any of the following:

(a) For aqueous and non-aqueous matrices, acceptable PT results, from a water pollution study, are required for each combination of technology and analyte or analyte group for which the department has identified that PT samples are required.

(b) For the drinking water matrix, acceptable PT results, from a water supply study, are required for each combination of method and analyte or analyte group.

Note: The department does not recognize PT samples prepared in a non-aqueous matrix to obtain or renew accreditation for analytes or analyte groups under the non-aqueous matrix.

(6) RENEWAL REQUIREMENTS FOR MULTIPLE SUCCESSIVE PT FAILURES. (a) A laboratory that experiences multiple successive PT failures shall submit two consecutive acceptable PT samples from an approved proficiency testing sample provider to renew its accreditation. Consecutive PT samples shall be two unique studies received by the laboratory at least ten business days apart. The laboratory may not prepare or analyze the two PT samples in the same batch.

(a) For aqueous and non-aqueous matrices, PT failure means failing three consecutive PT sample for any combination of technology and analyte or analyte group.

(b) For the drinking water matrix, PT failure means failing two consecutive PT sample for any combination of method and analyte or analyte group.

NR 149.25 Treatment of proficiency testing samples. (1) PT samples shall be subjected to any preparatory steps undergone by analytical samples of that matrix, unless the preparation instructions submitted by a proficiency testing sample provider specifically instruct omitting a preparatory step.

Note: Preparatory steps include digestions, distillations, extractions, concentrations, and dilutions.

(2) A laboratory may report multiple results for a single PT sample when the laboratory maintains accreditations for multiple technologies for any analyte or analyte group in aqueous and non-aqueous matrices.

(3) A laboratory may report multiple results of a single PT sample when the laboratory maintains certifications for multiple methods for any analyte or analyte group in the drinking water matrix.

(4) Prior to submitting PT results to a proficiency testing sample provider, all of the following apply:

(a) A laboratory may not send a PT sample, or portion of a PT sample, to another laboratory for analysis.

(b) A laboratory may not knowingly analyze a PT sample, or a portion of a PT sample, from another laboratory.

(c) Until a PT study has been closed, a laboratory may not share results of a PT sample from that study to any party other than the proficiency testing sample provider or regulatory agency.

NR 149.26 Reporting proficiency testing sample results. (1) A laboratory shall submit PT sample results to proficiency testing sample providers in accordance with the dates specified by the proficiency testing sample providers.

(2) PT reports may be submitted to the department directly from the proficiency testing sample provider or by the laboratory, but it is the laboratory responsibility to ensure the department receives the necessary reports for initial and revised applications. The laboratory shall submit reports in its entirety, without modification, to the department.

(3) Results from all PT reports issued to the department by proficiency testing sample providers shall be used to determine a laboratory's accreditation status.

(4) The department may only accept amended and reissued PT reports if the reissue is due to an error made by the proficiency testing sample provider and revised reports are all of the following:

(a) Clearly labeled as revised or reissued.

(b) Directly submitted to the department by the proficiency testing sample provider.

(c) Accompanied by an explanation of the proficiency testing sample provider's error.

Note: Re-issued reports are acceptable in cases when the laboratory neglected to instruct the proficiency testing sample provider to report results to the department.

NR 149.27 Proficiency testing sample acceptance limits and grading. (1) ACCEPTANCE LIMITS. A laboratory's result for any analyte or analyte group is considered unacceptable if it meets any of the following conditions:

(a) The result falls outside the acceptance limits.

(b) The laboratory reports a result for an analyte not present in the PT sample.

(c) The laboratory does not report a result for an analyte present in the PT sample.

(d) The laboratory fails to submit its results to the proficiency testing sample provider on or before the deadline for the PT study.

(e) The laboratory reports a method code for either an unapproved method or the method code reported is not appropriate for the technology-analyte or method-analyte combination.

(f) The laboratory fails to meet department specified grading criteria for multi-analyte PT samples.

Note: Department grading criteria can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(2) GRADING.

(a) PT samples for analytes in aqueous and non-aqueous matrices shall be graded in accordance with acceptance limits established by the department considering criteria developed by the EPA.

(b) When the EPA has not developed acceptance limits for required PT sample analytes, the department may develop acceptance limits based on its experience or information supplied by approved proficiency testing sample providers.

(c) When an insufficient number of laboratories participate in a study to generate peer-based acceptance limits in a PT sample with analytes for which the EPA has not established acceptance limits, the department may grade results using fixed acceptance limits.

(d) PT sample analytes in drinking water shall be graded in accordance with the acceptance limits established in 40 CFR 141.23 (k)(3)(ii), 40 CFR 141.24 (f)(17)(i)(C) and (D), 40 CFR 141.24 (f) (17)(ii)(B), 40 CFR 141.24 (h)(19)(i)(A) and (B), and 40 CFR 141.89 (a)(1)(ii), and 40 CFR 141.131 (b)(2) (ii), (iii).

(e) When accreditation in an analyte group is based on passing a representative PT sample containing more than one analyte, the laboratory shall report acceptable results on at least 80% of the analytes to achieve acceptable results for that sample. The department may investigate repeated failures for specific analytes and direct enforcement action in the event of two consecutive failures in the drinking water matrix or three consecutive failures in the aqueous matrix.

(f) The department shall establish procedures for evaluating false positives and false negatives reported in analyzed PT samples.

NR 149.28 Procedure for correcting unacceptable proficiency testing sample results. (1) AQUEOUS AND NON-AQUEOUS MATRICES. (a) If a laboratory does not meet the acceptance limits for a particular analyte or analyte group and the laboratory does not have acceptable results on a previous sample analyzed during the same accreditation period, the laboratory shall analyze a second PT sample for that analyte or analyte group.

(b) If the results of a second PT sample do not meet the acceptance limits, the department may initiate an assessment of the laboratory's quality control records if this action is necessary to validate data generated by the laboratory. If two consecutive PT samples do not meet acceptance limits, the laboratory shall do all of the following:

1. Prepare a corrective action report and initiate an action plan to correct the problems within 30 days of the date of notification of the second failure. This action plan shall include a timetable for correcting the problems and obtaining a third PT sample.

2. Analyze a third PT sample within 60 days of the date of notification of the second failure. If the results of the third PT sample do not meet the acceptance limits, the laboratory shall analyze two subsequent and consecutive acceptable PT samples.

(c) The department may not renew accreditation of those analytes or analyte groups for which a laboratory has failed three consecutive PT samples, and has not successfully analyzed two subsequent and consecutive PT samples for those analytes or analyte groups prior to September 1. The consecutive PT samples shall be two unique studies received by the laboratory at least ten business days apart. The laboratory may not be prepare or analyze the two PT samples in the same batch.

(d) When applying to have an analyte or analyte group reinstated after non-renewal for failing three consecutive PT samples, the laboratory shall provide acceptable results on two subsequent and consecutive PT sample studies for that analyte or analyte group. The consecutive PT samples shall be two unique studies received by the laboratory at least ten business days apart. The laboratory may not be prepare or analyze the two PT samples in the same batch.

(2) DRINKING WATER. If a certified laboratory does not meet the acceptance limits that have been established by the department, the department shall require the laboratory to analyze a second PT sample and may require the laboratory to submit a corrective action report. If the results of the second sample do not meet the acceptance limits, the department may not renew the laboratory's certification and may revoke the laboratory's certification as specified in s. NR 149.10. In order to re-instate the certification for the affected method - analyte or analyte group, the laboratory shall submit a revised application, pay the revised application fee, and provide acceptable results on two subsequent and consecutive PT sample studies for that method - analyte or analyte group. The consecutive PT samples shall be two unique studies

received by the laboratory at least ten business days apart. The laboratory may not be prepare or analyze the two PT samples in the same batch.

SUBCHAPTER VI - ON-SITE LABORATORY EVALUATIONS

NR 149.29 Purpose, type and frequency. (1) The department shall perform on-site evaluations to determine a laboratory's potential, actual, or continued ability to comply with the provisions of this chapter.

(2) The department shall conduct announced on-site evaluations of laboratories once every three years and when any of the following occurs:

(a) A laboratory submits an application to become certified or registered in any field of accreditation, unless the department waives the requirement to perform an on-site evaluation. When the department does not waive an evaluation, the evaluation shall be performed within 90 days after the department determines that a received application is complete and satisfactory.

(b) A laboratory changes its location, ownership or key personnel, unless the department waives the requirement to perform an on-site evaluation. When the department does not waive an evaluation, the evaluation shall be performed within 90 days after the department receives notification of these changes.

(c) The department determines that an on-site evaluation is necessary to verify corrective action implemented by a laboratory to address deficiencies identified in a previous on-site evaluation.

(d) The department has reason to believe that a laboratory is not in compliance with this chapter.

(3) The department may conduct unannounced on-site evaluations of a laboratory to verify compliance with this chapter after a notice of violation has been issued to a laboratory.

NR 149.30 Evaluation procedures and appraisal. (1) (a) The department shall perform on-site evaluations of laboratories to evaluate systems, practices, procedures, and documentation in a laboratory and to identify deficiencies according to documented procedures that promote consistency in determining a laboratory's potential, actual, or continued ability to comply with this chapter.

(b) If, in performing an on-site evaluation, the department finds that the laboratory is implementing a protocol, policy, or procedure that is neither allowed nor disallowed by method or this chapter, the department retains ultimate authority to determine the acceptability of the protocol, policy, or procedure. The department may seek the advice of the council in making determinations under this paragraph.

(2) The department shall provide a mechanism that allows laboratories to voluntarily appraise the evaluation process under this section.

NR 149.31 Evaluation reports. (1) The department shall document the deficiencies of an on-site evaluation under s. NR 149.30 in reports issued to the evaluated laboratory.

(2) The report of an on-site evaluation shall be issued to a laboratory within 30 days of the conclusion of the on-site visit. When the department finds it necessary to issue an evaluation report at a date later than 30 days after the conclusion of an on-site visit, the department shall notify the laboratory about the delay. The notice shall include an expected delivery date for the report.

NR 149.32 Evaluation corrective action. (1) A laboratory shall take corrective action to address all deficiencies discovered during an on-site evaluation under s. NR 149.30 and contained in an evaluation report under s. NR 149.31.

(2) A laboratory shall submit to the department, within 30 days from the evaluation report's date, a plan of corrective action to address all the deficiencies noted in the report. When a laboratory finds it necessary to submit a corrective action plan at a date later than 30 days after the evaluation report's date, the laboratory shall notify the department about the delay and provide an expected delivery date in consultation with the department.

(3) The department shall review the corrective action plan submitted by a laboratory under sub. (2) and inform the laboratory whether the submitted plan addresses satisfactorily all noted deficiencies, or whether additional action or documentation is necessary to determine the laboratory's ability to comply with this chapter, subject to all of the following:

(a) When the department determines that the submitted corrective action plan addresses all noted deficiencies satisfactorily, the department shall inform the laboratory in writing within 30 days that the plan is acceptable.

(b) When the department determines that additional action or documentation is needed to evaluate compliance with this chapter, the department, in consultation with the laboratory, shall set a date for the laboratory to submit a second corrective action plan.

(4) (a) If the department determines that the second corrective action plan submitted under sub. (3) (b) addresses all noted deficiencies satisfactorily, the department shall inform the laboratory in writing that the evaluation process has concluded.

(b) If the department determines that the second corrective action plan submitted under sub. (3) (b) does not address all the noted deficiencies satisfactorily, the department may schedule another on-site evaluation to determine the laboratory's compliance with this chapter, terminate any outstanding application that led to the original on-site evaluation, or direct enforcement to the laboratory.

(c) If a second on-site evaluation is scheduled as a follow-up to a second corrective action plan submitted under sub. (3) (b), the department shall establish deadlines that resolve any remaining unresolved deficiencies expeditiously, but no later than 90 days after the conclusion of the follow-up visit.

NR 149.33 Conflicts of interest. (1) The department shall establish procedures to ensure and document that laboratory evaluators under its employment are free of any conflicts that would render the laboratory evaluator incapable of performing an objective and unbiased evaluation of a laboratory.

(2) A laboratory may request information and documents used by the department to establish that any evaluator assigned to perform the laboratory's evaluation is free of any conflicts of interest.

NR 149.34 Evaluator qualifications. (1) The department shall develop procedures to establish and evaluate the education, experience, and credentials of the laboratory evaluators under its employment.

(2) A laboratory may request information and documents used by the department to establish that any evaluator assigned to perform the laboratory's evaluation has the necessary education, experience, or credentials to perform evaluations competently.

SUBCHAPTER VII - QUALITY SYSTEMS

NR 149.35 General requirements. (1) SCOPE. This subchapter establishes personnel, quality assurance, quality control, method selection, sample handling, and documentation requirements for laboratories.

(2) RESPONSIBILITY FOR QUALITY SYSTEM. A laboratory shall conduct analytical activities under a quality system that incorporates the provisions of this subchapter. At least one individual, however named, within a laboratory's organization or under the laboratory's employment shall be identified to the department as responsible for establishing, implementing, assessing, and revising, as needed, a laboratory's quality system.

NR 149.36 Laboratory personnel. (1) MANAGEMENT AND ANALYTICAL STAFF. The laboratory shall have personnel with education, training, or experience that allows the laboratory to comply with the requirements of this chapter. Contractors, external to the laboratory, may serve in key laboratory roles. When external contractors serve in essential laboratory roles, the contracts shall be available to the department to ensure that contractual specifications satisfy the requirements of this chapter.

Note: For requirements regarding changes in key personnel see s NR 149.155.

(2) DEMONSTRATION OF CAPABILITY.

(a) When a laboratory references a method that contains protocols for demonstrating initial capability, continuing capability or both, personnel performing analyses using these methods shall perform the protocols; meet any associated evaluation criteria, and document the results. When initial demonstrations of capability include the analysis of samples, the samples shall be prepared from a clean matrix and processed through all method preparation steps.

(b) When a laboratory references a method that does not contain protocols for demonstrating initial capability, the laboratory shall establish initial demonstration of capability criteria for determining that each person who performs testing on compliance samples using the method has demonstrated the necessary skills and expertise required to generate quality analytical results. The laboratory shall retain documentation that each person performing a given test on compliance samples has satisfied the demonstration of capability criteria established by the laboratory.

NR 149.365 Laboratory ethics. All of the following practices are prohibited and may result in enforcement action as presented in s NR 149.10:

(1) Fabrication, falsification, or misrepresentation of data.

(2) Improper instrument clock setting, termed time traveling, or improper recording of date or time.

(3) Unwarranted manipulation of samples, software, peak integration, or analytical conditions.

(4) Concealing or failing to report a known improper or unethical behavior or action associated with sample analysis.

NR 149.37 Quality manual. (1) PURPOSE AND GENERAL PROVISIONS. Each laboratory shall define its quality system in a quality manual, however named. All policies and procedures governing the laboratory's quality system shall be documented or referenced in the quality manual. All laboratory personnel shall follow the policies and procedures established by the quality manual.

(2) FORMAT. The quality manual shall have a format, however conceived, that addresses the content elements specified in this section. Content elements may be presented in narrative, tabular, schematic, or graphical form. The manual shall be a document in hard copy or electronic format traceable to the laboratory.

(3) CONTENT. Unless included in other standard operating procedures maintained under s. 149.40 (4), the quality manual shall include, address, or refer to all of the following elements:

(a) Procedures for retention, control, and maintenance of documents used in or associated with analysis.

(b) Procedures for achieving traceability of standards, reagents, and reference materials used to derive any results or measurements.

(c) Procedures for handling samples.

(d) Procedures for calibration, verification, and maintenance of support equipment.

(e) Procedures for evaluating quality control samples.

(f) Procedures for initiating, following up on, and documenting corrective action, addressing quality assurance and quality control failures, and any discrepancies or nonconformances.

(4) REVISIONS. The quality manual shall be kept current by the responsible party, however named, for maintaining the laboratory's quality system. All editions or versions of the quality manual shall indicate the dates in which the quality manual were issued or revised.

NR 149.38 Corrective action (1) The laboratory shall document, step by step, the procedures that will be taken for corrective action when a quality control sample fails.

(2) The laboratory shall take corrective action when any of the following occurs:

(a) Departures from established policies and procedures in the quality system are identified or become apparent.

(b) Quality control samples exceed acceptance limits, unless reanalysis of the affected sample resolves the issue.

(3) The corrective action under sub. (2) shall identify the problem, determine the most probable cause of the problem, implement solutions to correct the problem, and include a mechanism to verify that the action has had the desired effect.

(4) The laboratory shall document corrective action taken to address the nonconformance under sub. (2) (a) or (b) and any other changes resulting from corrective action investigations. Changes implemented to address failures of quality control samples shall be those that resolve or address the failure. Changes shall be implemented so as to minimize the number of affected results reported by a laboratory.

(5) The laboratory shall monitor the effectiveness of implemented corrective action changes and take additional corrective action when initial or subsequent corrective action fails to resolve the nonconformance.

(6) Analysts may not always be able to identify the source of single event failures of quality control samples. However, root cause analysis shall be performed when there is recurrence.

NR 149.39 Records and documents. (1) RECORDS AND DOCUMENTS RETENTION AND CONTROL.

(a) The laboratory shall establish procedures to control and manage all records and documents that form part of its quality system and that are required to demonstrate compliance with this chapter.

(b) The procedures shall ensure that documents required to perform analyses and to ensure the quality of generated data are available to laboratory personnel, and that records and documents are reviewed periodically for continuing suitability and, when necessary, revised to facilitate compliance with the requirements of this chapter.

(c) The laboratory shall retain all records and documents, which are part of its quality system, and that are required to demonstrate compliance with this chapter, for a minimum of three years after the generation of the last entry in an associated record or document. The laboratory shall retain records and documents for a longer minimum period if the records and documents are necessary to reconstruct analytical results generated during a three year period.

(d) The department may require, in writing, that records be retained for a longer period than that specified in par. (c) if the department has initiated legal action involving test results or the accreditation status of the laboratory.

(e) The laboratory shall identify to the department a responsible party for retaining documents and records for the required period in the event the laboratory changes ownership or ceases to be accredited.

(f) Records and documents shall be handled and stored in a manner that ensures permanence and security for the required retention period and that facilitates retrieval to demonstrate compliance with this chapter.

(g) All records shall allow for reconstruction of reported results from raw data. Records and documents shall be legible and entries shall be safeguarded against obliteration, erasures, overwriting, and corruption and are subject to all of the following requirements:

Note: The determination of legibility includes concerns regarding the quality and permanence of records and the ability to decipher numbers and letters. For example, thermal paper ages and eventually becomes unreadable, so thermal paper printouts should ultimately be scanned or copied to ensure permanence.

1. Handwritten records shall be recorded in ink.

2. Records and documents that are stored only on electronic media shall be supported by the hardware and software necessary for retrieval and reproduction into hard copy.

3. Corrections or other alterations made to entries in records or documents may not obscure the original entry.

4. The laboratory shall have procedures to prevent unauthorized access or amendments to records and documents.

(2) ADMINISTRATIVE RECORDS. A laboratory shall maintain all of the following administrative records:

(a) Certificates of accreditation issued by the department, unless the department has requested a laboratory to return the certificates to the department.

(b) Certificates issued to the laboratory by entities with which the department has entered into a reciprocal agreement under s. NR 149.08, if a laboratory is accredited for this chapter under any existing agreement.

(c) Records of personnel qualifications, experience, and training when personnel are required to possess or maintain specific credentials by s. NR 149.36 (2).

(d) Records of demonstration of capability for each analyst required to perform the demonstrations specified in s. NR 149.36 (2).

(e) Copies of, or access to, other regulations, standards, and documents necessary for the laboratory to operate or to maintain compliance with this chapter.

(3) REAGENT AND STANDARD RECORDS AND REFERENCE MATERIALS. The laboratory shall document the identity, source, and purity of standards and reagents used in the methods performed. The laboratory shall retain records of certificates of analysis or purity, when the records are provided by the supplier, and are necessary to establish the identity, source, or purity of standards and reagents.

(a) Reagent containers shall be labeled with an expiration date, chemical name, and concentration. Except for instrument vials, standard containers shall be labeled with an expiration date, chemical name, and concentration.

(b) The laboratory shall document the lot number, manufacturer, chemical name, concentration, and the date of expiration for standards and reagents purchased from a manufacturer. These records shall be separate from the container labels.

(c) The laboratory shall document the preparation details of all prepared standards and reagents. These records shall link the prepared standards and reagents to the respective originating stocks or neat compounds and shall indicate the date of preparation, date of expiration, and the identity of the preparer.

(d) The laboratory may not use any standards and reagents beyond the expiration dates, unless the laboratory is using the standard and reagents for qualitative determinations.

(e) Certificates of accuracy for all reference materials shall be maintained.

(4) ANALYTICAL AND TECHNICAL RECORDS.

The format of the analytical and technical records of a laboratory shall facilitate access to the information in this subsection and may be contained in bench sheets, log books, notebooks, journals, manuals, standard operating procedures under s. NR 149.40, and forms, in hard copy or electronic media.

NR 149.40 Standard operating procedures. (1) A laboratory shall maintain written standard operating procedures that document or reference activities needed to maintain its quality systems and that enable performing or reproducing an analysis in its entirety as performed at the laboratory. Each laboratory shall develop, maintain, and keep current its standard operating procedures for both sample preparation and analysis.

Note: Sample preparation includes digestions, distillations, extractions, concentrations, dilutions, and clean-up performed on samples prior to the determinative analytical step.

(2) Standard operating procedures may be documents written by laboratory personnel or may consist entirely of copies of published documents, manuals, or procedures if the laboratory follows the chosen source exactly.

(3) Standard operating procedures may consist, in part, of copies of published documents, manuals, or procedures if all of the following conditions are met:

(a) Modifications to the published source are described in writing in additional documents.

(b) Clarifications, changes, or choices are completely described in additional documents, when published sources offer multiple options, ambiguous directives, or insufficient detail to perform or reproduce an analysis.

(4) Standard operating procedures shall indicate the dates of issue or revision.

(5) When the standard operating procedure is written by the laboratory, each standard operating procedure shall include, address, or refer to all of the following elements, if applicable:

(a) Identification of the referenced method.

(b) For multi-analyte methods, a list of analytes.

(c) Potential interferences and how the interferences are treated.

(d) Equipment and analytical instruments.

(e) Consumable supplies, reagents, and standards.

(f) Sample preservation, storage, and hold time.

(g) Quality control samples and frequency of the analysis.

(h) Calibration and standardization.

(i) Procedure for analysis.

(j) Data assessment and acceptance criteria for quality control measures.

(k) Corrective actions and contingencies for handling out of control or unacceptable data.

NR 149.41 Method selection. (1) The laboratory shall use methods for environmental testing required by covered programs under this chapter and that are suitable for the matrix, type of analyte, expected level of analyte, regulatory limit, and potential interferences in the samples to be tested.

(2) When methods are not required by covered programs under this chapter or permits issued by the department, the laboratory shall consult with the department to select a method that meets the requirements in par. (1).

(3) When using methods associated with the methods compendium document, "Test Methods for Evaluating Solid Waste," the laboratory shall comply with the minimum requirements of the methods as written and state which options are being implemented when options exist.

Note: The document above can be found on the Wisconsin department of natural resources laboratory accreditation program website.

(4) The department reserves the right to determine whether or not a modification is within the scope of a method.

NR 149.42 Alternative methods. (1) The department may allow the use of alternative methods from those required by covered programs, including the safe drinking water program, if a laboratory requests approval, and if the EPA has granted approval for the alternative methods.

(2) On a case-by-case basis, the department may allow the use of methods other than those required by covered programs for any of the following situations:

(a) The covered program, after consultation with the laboratory accreditation program, determines that the allowance does not result in a detrimental effect on the quality and defensibility of the results to be generated.

(b) The request is for approval of a method that employs a new or emerging technology and there is documentation that substantiates the validity of the new or emerging technology for the intended purpose.

(3) Requests to use an alternative method shall include the reason for seeking the approval, a description of the principles of any new or emerging technology involved, and the potential scope of application of the method. The department may establish criteria for validating the method for the specific application and scope requested. If the laboratory's method validation results meet the established validation criteria, the department shall allow the use of the method for the specific application and scope requested.

(4) The department shall approve or deny the request for consideration of approval for use within 90 days from the receipt of the request. The laboratory accreditation program shall consider in its decision whether the covered programs that would be the recipients of the data generated have a demonstrated need for allowing the alternative method.

(5) The department may charge a fee under s. 299.11 (5) (d), Stats., if it is necessary to verify the results of any validation data submitted by a laboratory requesting use of an alternative method.

NR 149.43 Laboratory facilities. (1) The laboratory shall ensure that the environmental conditions of its facility do not adversely affect the required quality of any measurement.

(a) Laboratory facilities shall ensure effective separation between neighboring areas in which incompatible analytical activities take place. The laboratory shall take measures to prevent cross-contamination.

(b) Access to and use of areas affecting the quality of environmental tests shall be controlled to an extent commensurate with the type of analysis and samples analyzed by a laboratory.

(2) The laboratory shall monitor, control, and record environmental conditions when the environmental conditions are required by the methods or when the environmental conditions influence the quality of test results.

NR 149.44 Laboratory equipment. (1) GENERAL PROVISIONS.

(a) The laboratory shall furnish the equipment necessary and required for the correct performance of all the environmental tests and associated preparations and activities it performs.

(b) The laboratory shall use equipment and software for testing and calibration that achieves the accuracy required to comply with the requirements of the methods or specifications relevant to the environmental testing performed by the laboratory.

(2) LABORATORY SUPPORT EQUIPMENT.

(a) The laboratory shall use support equipment only for its intended purpose and it shall keep that equipment in working order by routine and preventive maintenance.

(b) When support equipment leaves the direct control of the laboratory for maintenance, or for any other reason, the laboratory shall ensure that the function and calibration status of that equipment is checked or demonstrated to be in working order before the equipment is returned to service.

(3) CALIBRATION AND VERIFICATION OF SUPPORT EQUIPMENT.

(a) The laboratory shall calibrate or verify all support equipment within that equipment's range of use using available reference materials traceable to NIST. When reference materials traceable to NIST are not commercially available, the laboratory shall use materials of a quality that will ensure the accuracy of the calibrated or verified support equipment for its intended use.

(b) The acceptability criteria for these calibration verification checks shall be established by the methods, or in the absence, tolerances established by manufacturers.

(c) In addition to the requirements listed under s. NR 149.44 (3) (d), (e), and (f), the laboratory shall establish a policy or procedure for verifying the accuracy of support equipment. The policy shall include all of the following elements:

a. Procedures for verifying accuracy.

b. Procedures for utilization of correction factors when there is a bias.

c. Evaluation criteria which defensibly document the continued accuracy of the equipment.

d. Protocols for addressing equipment which fails to meet verification requirements.

(d) Policies shall include all of the following minimum verification frequencies:

1. Annually: devices used to measure atmospheric pressure and temperature.

2. Quarterly: mechanical and automatic volumetric dispensing devices, including pipettes.

3. Monthly: balances, with one weight in the expected range of use.

4. Each day of use: when specific temperatures are required by method, regulation, or covered program, the operating temperature of the equipment used to control temperatures shall be checked and documented.

(e) The weights used to verify the accuracy of balances shall be all of the following:

1. Handled and stored in a manner that protects the weights integrity.

2. Traceable to NIST, and shall be of class or type suitable for verifying the accuracy of analytical balances.

3. Certified for accuracy every five years by a metrology service outside the laboratory. Alternatively, new individual weights of suitable class or type traceable to NIST shall be purchased for use. Weight re-certification shall be performed sooner than every five years if balance checks performed using these weights suggest that a change in the certified weights has occurred. Weights that are currently NIST traceable may be used to verify other weights.

(f) All of the following are exempt from accuracy verification under this section:

1. Glass microliter syringes.

2. Disposable pipettes

3. Devices specified in s. NR 149.44 (3) (d) that are dedicated to use in method steps or applications that do not require the use of class A labware.

(4) LABORATORY ANALYTICAL INSTRUMENTS.

(a) The laboratory shall use personnel properly trained to operate analytical instruments. Instructions on the use and maintenance of equipment shall be available to instrument operators.

(b) The laboratory shall properly maintain, inspect, and clean all instruments. The laboratory shall establish procedures for the maintenance of analytical instruments to prevent contamination or deterioration that may affect reported results.

(c) The laboratory shall remove from service all analytical instruments that give suspect results or that have been shown to be defective or outside of performance specifications.

(d) When analytical instruments leave the direct control of the laboratory for maintenance or for any other reason, the laboratory shall ensure that the instruments are functional and that a new initial calibration has passed, to demonstrate that the instruments are in satisfactory working order before returned to service.

NR 149.442 Handling of samples. (1) SAMPLE COLLECTION.

(a) The laboratory shall retain records supplied by the collector to allow the laboratory to evaluate collection information against the laboratory's sample acceptance policy.

(b) The laboratory shall have a procedure in place to demonstrate that previously used sample bottles do not contribute contamination to the reported results.

(2) SAMPLE ACCEPTANCE POLICY AND SAMPLE HANDLING PROTOCOLS.

(a) The laboratory shall have and follow a written policy that clearly outlines the conditions under which samples will be accepted or rejected for analysis, or under which associated reported results will be qualified.

Note: s. NR 149.48 provides rejection criteria.

(b) The laboratory shall receive drinking water samples in a secure manner so that the integrity of the sample is maintained.

(c) When samples received do not conform to the descriptions provided by a collector, the laboratory shall consult with the collector or sample originator to determine the proper processing or disposition of the samples.

(d) The laboratory shall place a unique identification code on a sample container as a durable label. The unique identification code shall be used as a link to associate samples with the complete sample history, including treatment and analysis, while in the laboratory's possession.

(3) SAMPLE PRESERVATION AND HOLDING TIME.

(a) A laboratory shall follow the sample preservation procedures and holding times required by state and federal regulations.

Note: Sample preservation procedures and holding times are given in 40 CFR 136, 40 CFR 141, NR 219, SW–846 "Test Methods for Evaluating Solid Waste" and may be specified in the methods.

(b) The laboratory shall consider a non-drinking water sample, requiring preservation at ≤ 6ºC under this section, to be preserved if the sample is received at a temperature greater than its freezing point to 6ºC or if the sample is received surrounded by ice. The preservation status of a non-drinking water sample may be recorded as "received on ice" only if solid ice is present around the sample when the sample is received at the laboratory. The preservation status of a sample preserved with ice packs, such as "blue ice," may not be recorded as "received on ice."

(c) The laboratory shall measure and document the sample temperature for a drinking water sample at the time of receipt.

(d) When sample temperature measurements are required, the laboratory shall record any of the following:

1. The temperature of an actual sample.

2. The temperature of a temperature blank shipped with the samples.

3. The temperature of the melt water in the shipping container.

(e) The laboratory shall verify the pH of each bottle received for samples requiring chemical preservation to a specific pH requirement under this section. Bottles not received at the proper pH may be adjusted at the laboratory provided that the methods allow preservation upon receipt and the lab retains documentation of its actions.

Note: For aqueous samples that require oil and grease as hexane extractable material and VOC, the pH verification is only required from the bottle that is analyzed.

(4) SAMPLE RECEIPT DOCUMENTATION. The laboratory shall document the receipt and condition of all samples in chronological hard copy or electronic records. The records may be maintained in any format that retains all of the following information:

(a) The identity of the client or entity submitting samples or the project associated with the received samples.

(b) The dates of sample collection.

(c) The times of sample collection for samples to be analyzed for tests with holding times expressed in hours.

(d) The unique sample identification code assigned by the laboratory.

(e) Documentation of sample preservation status and other sample conditions on receipt for all sample containers analyzed for those tests for which it is appropriate.

(f) An unequivocal link between the sample identification code assigned by the laboratory and the field collection identification code assigned by the collector.

(g) The requested analyses, unless the laboratory collects and analyzes its own samples and analyses are directed by permit.

(h) The reference to requested test methods, when the collector or sample originator specifies the methods.

(i) Any comments resulting from the inspection undertaken to determine whether samples meet the policy in sub. (2).

(5) STORAGE OF SAMPLES.

(a) The laboratory shall have procedures and appropriate facilities for avoiding deterioration, contamination, loss, or damage of samples during storage.

(b) The laboratory shall store samples requiring thermal preservations at ≤ 6 °C at temperatures from greater than the samples freezing point to 6 °C.

(c) The laboratory shall store samples separately from all standards, reagents, food, and other potentially contaminating sources. Samples shall be stored in areas that prevent or minimize cross-contamination.

(d) The laboratory shall store sample extracts, digestates, leachates, or concentrates, resulting from any initial preparatory step, as specified in this subsection**.**

NR 149.444 Initial instrument calibration requirements. (1) INITIAL CALIBRATION - GENERAL PROVISIONS.

(a) The laboratory shall calibrate or verify the calibration of all analytical instruments before the instruments are used to provide any quantitative results.

(b) Once a calibration model is selected, a calibration function is established, and an initial calibration is finalized, a laboratory may not change the model or calibration function after samples have been analyzed, without performing another initial calibration.

(c) The laboratory shall perform an initial calibration after instruments undergo non-routine maintenance, when repeated use or other conditions change the expected behavior, or when a CCV standard fails.

(d) The laboratory shall retain all the raw data necessary to reconstruct or reproduce calibration functions associated with initial calibrations.

(e) For colorimetric technologies, the laboratory may not use a method blank to zero the instrument.

Note: For colorimetric technologies, other than those based on chemistries when the instrument response varies inversely with concentration, the instrument should be zeroed with the solvent of interest which is generally reagent water.

(f) The laboratory may not utilize pre-programmed initial calibrations, provided by the instrument manufacturer, for compliance testing.

(g) The laboratory shall include or reference the details of initial instrument calibration procedures, including algorithms, any required equations, and acceptance criteria in the method standard operating procedure.

(h) For initial calibrations used to determine the LOD, the laboratory shall use the same number and concentration levels of standards, as that used for routine sample analysis, except as allowed in s NR 149.444 (5).

(i) When required by method, the laboratory shall process each calibration standard in the same manner as samples.

(j) Point to point calibrations are not allowed unless otherwise specified in this chapter.

(2) INITIAL CALIBRATION – MINIMUM NUMBER OF STANDARDS. To establish calibration, the laboratory shall select a number of non−zero standard concentrations that is appropriate for the calibration model selected and the expected range of concentrations. If a method requires analyzing more than three standards to establish a linear calibration, and the laboratory chooses to narrow the calibration range of the determination to no more than two orders of magnitude, the laboratory may use three standards to generate the initial calibration. The minimum number of non-zero standard concentrations selected to establish calibration shall be three except for all of the following:

(a) Dissolved oxygen meters, for which the minimum shall be one. Dissolved oxygen meters shall be calibrated against water−saturated air or air−saturated water at a known temperature and pressure. Alternatively, calibration may be performed using an iodometric method.

(b) Conductivity meters, for which the minimum shall be one. Conductivity meters shall be calibrated by verifying the cell constant or adjusting the meter based on the analysis of a potassium chloride standard solution.

(c) Inductively coupled plasma emission spectrophotometers and inductively coupled plasma mass spectrometers, for which the minimum number shall be one.

(d) pH meters, for which the minimum number shall be two.

(e) Quadratic calibration models, for which the minimum shall be five.

(f) Cubic calibration models, for which the minimum shall be seven.

(3) INITIAL CALIBRATION – CONCENTRATION LEVELS OF STANDARDS. The concentration of the standards chosen to establish a calibration function shall be within the same orders of magnitude as the expected concentration of samples. With the exception of analyses performed by HRGC/MS, ICP, or ICP/MS, a laboratory reporting results at levels at or near the LOD of an analysis, shall include in initial calibrations a standard at a concentration near the LOQ of the analysis.

(4) INITIAL CALIBRATION – CALIBRATION MODELS. The laboratory shall select a calibration model that is appropriate for the expected behavior of the analytical instrument to be calibrated. To generate a calibration model, the laboratory shall select a reduction technique or algorithm that is appropriate for the calibration model and the number of non-zero standards used, subject to all of the following:

(a) The selected algorithm or reduction technique shall be describable mathematically, and shall provide equations, coefficients, or parameters necessary to characterize the calibration function uniquely, unless an analytical instrument is tuned to conform to a universally accepted scientific law or scale.

Note: The response of dissolved oxygen meters is generally adjusted to conform to the concentration of oxygen allowable in a given liquid at a specified temperature and pressure. The response of an ion selective electrode is generally tuned to conform to the Nernst equation. The response of a pH meter is tuned to conform to the universally accepted pH scale. When these instruments are adjusted or tuned according to these principles, characterizing the calibration reduction algorithm mathematically is not necessary.

(b) Non-linear functions may not be used to compensate for instrument saturation, insensitivity, or malfunction.

(c) The laboratory may use weighted algorithms, unless the weighted algorithms are chosen to compensate for deviations from the expected behavior of a detector of an analytical instrument resulting from instrument saturation, insensitivity, or malfunction.

(d) The laboratory may not use reiterative reduction techniques or algorithms that force calibration functions through zero.

Note: Reiterative reduction techniques or algorithms that force the calibration function through zero obtain mathematically, by repeated application, a null response for a zero standard that has a non-zero response, or adjust calibration parameters to obtain a theoretical null response without analysis of a calibration blank. This paragraph does not prohibit the use of average calibration or response factors or automatic zeroing as part of an initial calibration, when methods, regulations or covered programs allow those techniques.

(e) The lowest concentration standard in the initial calibration cannot be more than two times the concentration of the LOQ.

(5) INITIAL CALIBRATION – EXCLUDING CALIBRATION POINTS. If one or more calibration standards are excluded from the calibration all of the following criteria shall be met:

(a) The rationale for the exclusion is documented.

(b) Any regulatory required detection limits can still be met.

(c) If the standard being excluded is not the highest standard, it shall be removed for all analytes in that standard.

(d) If the highest calibration standard is removed, the linear range shall be limited to the remaining high standard concentration.

(6) INITIAL CALIBRATION – EVALUATING ALGORITHM VALIDITY. The laboratory shall establish acceptability criteria for initial calibrations. The type of criteria chosen and the acceptance range shall be appropriate for the type of analytes to be quantitated, the calibration model selected, and reduction technique or algorithm chosen. All of the following shall apply in establishing acceptability criteria under this subsection:

(a) When the x-intercept is used to evaluate the calibration, then the absolute value of the x-intercept of the calibration function for each analyte may not exceed its LOD.

(b) Unless otherwise specified by the method, when RSE is used to evaluate the calibration, then the relative standard deviation may not exceed 15% for inorganic analytes or 20% for organic analytes.

(c) Unless otherwise specified by the method, when residuals of each calibration standard are used to evaluate the calibration, the standard recovery for all but the lowest calibration point shall fall within 90% to 110% for inorganic

analytes or within 70% to 130% for organic analytes. Recovery for the lowest calibration point shall be within 80% to 120% for inorganic analytes or 50% to 150% for organic analytes.

(d) When average response factors are used to reduce calibration data, the relative standard deviation of the response factors may not exceed 20%, unless the method allows a larger percentage.

(e) When linear regression or least squares analysis is used to reduce calibration data, the correlation coefficient (r) of the resultant calibration shall be at least 0.995 for inorganic analytes or 0.99 for organic analytes.

(f) When quadratic (2^{nd} order) or cubic (3^{rd} order) analysis is used to reduce calibration data, the coefficient of determination (r^2) of the resultant calibration shall be at least 0.995 for inorganic analytes or 0.99 for organic analytes.

(7) INITIAL CALIBRATION – VERIFYING ACCURACY. Except for calibrations generated using dissolved oxygen meters, pH meters, or conductivity meters, the laboratory shall verify all initial instrument calibrations after the calibrations are generated, but before the calibrations are used to quantitate any samples, with a second source standard, referred to as an ICV standard. ICV standards shall be treated in the same manner as the standards analyzed for the initial calibration. Unless otherwise required by regulation, method, or covered program, the acceptance criteria for ICV standard shall be all of the following:

(a) Obtaining concentrations within 10% of the theoretical concentrations of all reportable inorganic analytes.

(b) Obtaining concentrations within 20% of the theoretical concentrations of all reportable organic analytes.

(8) INITIAL CALIBRATION – EVALUATING SENSITIVITY. When methods require an ICB be analyzed after the initial calibration, the ICB shall be treated in the same manner as the initial calibration standards. The absolute value of the concentration of an analyte in an ICB may not exceed its LOD.

NR 149.446 Continuing instrument calibration requirements. (1) CONTINUING CALIBRATION - GENERAL PROVISIONS. When an initial instrument calibration is not performed on the day of analysis, the continuing validity of the initial calibration shall be verified prior to analyzing any batch quality control or environmental samples by the analysis of one or more CCV standards, subject to all of the following:

(a) CCV standards shall contain all analytes to be reported and may be prepared from the same standards used to generate the initial calibration.

(b) CCV standards shall be treated the same as the standards used in the initial calibration. When the method requires that the standards be treated the same as samples, the CCV standards shall be performed with the associated batch so that the CCV standards and samples are all processed together.

(c) Continuing calibration verification is not required for technologies when there are no initial calibrations established.

(d) If an LCS also serves as a CCV standard, the acceptance criteria of the CCV standard shall be used.

(2) CONTINUING CALIBRATION – FREQUENCY.

(a) Continuing calibration verification shall be performed at least once on each analysis day when an initial calibration is not performed, prior to sample analysis and batch quality control analysis.

(b) Continuing calibration verification shall be performed after the consecutive analysis of each group of 20 environmental samples, if 20 or more samples constitute an analytical batch, unless otherwise required by regulation, method, or covered program.

(3) CONTINUING CALIBRATION – MINIMUM NUMBER OF STANDARDS AND CONCENTRATION LEVELS.

(a) For linear and quadratic model calibration functions, the laboratory shall analyze at least a single CCV standard. The concentration of the standard shall be within the range established during the initial calibration.

Note: Linear calibration models include electrometric technologies (pH and ion selective electrode), average response factor, average calibration factor, linear regression, and least squares analysis.

(b) For cubic model calibration functions, or those third order polynomials, the laboratory shall analyze at least two CCV standards in each instance when a single CCV standard is required by regulation, method, or covered program.

(4) CONTINUING CALIBRATION – VERIFYING ACCURACY.

(a) Unless otherwise required by regulation, method, or covered program, the acceptance criteria for CCV standards shall be within 10% of the theoretical concentrations of all reportable inorganic analytes from an initial calibration.

(b) Unless otherwise required by regulation, method, or covered program, the acceptance criteria for CCV standards shall be within 20% of the theoretical concentrations of all reportable organic analytes from an initial calibration.

(5) CONTINUING CALIBRATION– ACCURACY CORRECTIVE ACTION. When the CCV standard results obtained are outside acceptance criteria, the laboratory shall perform another CCV standard under the same conditions. If the results of this second CCV standard fail to meet acceptance criteria, the laboratory shall take corrective action. After taking corrective action, the laboratory shall perform two consecutive CCV standards that meet acceptance criteria or perform another initial calibration.

(6) CONTINUING CALIBRATION– EVALUATING SENSITIVITY. When the method requires that the standards be treated the same as the samples and when the method requires a CCB, the CCB shall be performed with the associated batch so that the CCB and samples are all processed together. The CCB is processed at the same frequency as the CCV standard. The CCB is subject to the same criteria specified in s. NR 149.48 (5)(d).

NR 149.45 Measurement traceability. The laboratory shall maintain all analytical and technical records containing raw and derived data, or original observations, necessary, to allow historical reconstruction of all laboratory activities that contributed to generating reported results. Observations, data, and calculations shall be recorded at the time they are made. At a minimum, the laboratory shall ensure that results of analyses can be linked to sample collection data, preparation records, calibration records, analytical records, test reports, corrective action, and any chemicals used.

NR 149.47 Reporting results. (1) GENERAL PROVISIONS

(a) The laboratory shall report results of each test performed by the laboratory in accordance with any requirements or instructions specified in the methods or by the department.

(b) The laboratory shall quantitate sample results only from initial instrument calibrations, unless otherwise allowed by regulation, method, and covered program or unless any of the following applies.

1. Samples analyzed by inductively coupled plasma emission spectrophotometers and inductively coupled plasma mass spectrometers having responses at or greater than 90% of the established upper limit of the linear dynamic range of the instruments shall be diluted and reanalyzed.

2. When an analyte does not perform as well as the majority of the analytes in a multi-analyte initial calibration, analysis may proceed and results reported for these analytes provided that the results are appropriately qualified as required in this section.

(c) When samples cannot be diluted and reanalyzed, the laboratory shall report sample results with appropriate qualifiers.

(d) The laboratory shall establish procedures for reporting results for samples analyzed by dual column and dual detector systems. These procedures shall establish all of the following prior to analysis:

1. A primary column or primary detector.

2. Conditions under which a presumptive identification is confirmed and reported.

3. A control limit for the RPD of results greater than the LOD on both columns.

(e) When quantitative results are obtained by dual column or dual detector systems, and the RPD exceeds the lab's control limit, then the higher of the two results shall be reported unless the analyst can defensibly document that the higher result is biased due to interference. In this case the laboratory can report the lower result with a qualifier indicating the value of the higher result or report both results.

(2) FORMAT AND CONTENT.

(a) Laboratory test reports shall have formats that facilitate reviewing the content elements specified in this section, unless otherwise provided by pars. (b), (c) and (d). Content elements may be presented in any form, including electronic media.

(b) When tests are performed for internal clients, or when a laboratory has a written agreement with a client, the laboratory may issue reports without all the content elements specified in this section. However, the laboratory shall retain and make available to the department, upon request, records that include the content elements specified in this section.

(c) A laboratory that is operated by a facility whose function is to provide data to monitor the facility's compliance with covered programs shall retain and make available to the department, upon request, records that include the content elements specified in this section. Laboratory reports with all the content elements specified in this section are not required to be issued if any of the following apply:

1. The laboratory is responsible for preparing regulatory reports in a specified format to the department.

2. The laboratory provides information to another individual within the facility for preparation of regulatory reports in a specified format to the department.

(d) Unless otherwise specified by the department, for covered programs that receive data on behalf of a facility, directly from a laboratory, or when provided by pars. (b) and (c), test reports from the laboratory shall include all of the following information.

1. The name of the laboratory where the tests were performed.

2. The laboratory's accreditation identification number.

3. The sample identifying information provided by the client or collector.

4. Identification of the methods used for preparation and analysis.

5. The collection date of the samples.

6. The dates of analysis, extraction, or digestion, when a holding time has been established for the preparation step.

7. When non-aqueous sample results are reported, the laboratory shall indicate whether the non-aqueous sample results were reported on a dry weight or wet weight basis.

8. The LOD and LOQ for tests which the department requires reporting to the LOD.

9. For sample results requiring adjustments, an indication of whether the LOD and LOQ have been adjusted accordingly.

Note: Sample adjustments are any sample dilutions or sample amounts that were used differently than those used in the initial demonstration of capability and MDL studies.

10. The date of the test report.

11. Any qualifiers with reported results.

12. The identity of the subcontract laboratory, for each reported result generated by a subcontract laboratory.

(3) AMENDMENTS TO LABORATORY TEST REPORTS.

(a) A laboratory may make amendments to a test report already issued by the laboratory in a manner that clearly identifies the reasons for the amendment and that references the original laboratory test report.

(b) Amended reports shall comply with the requirements of this section.

(4) SAMPLE REJECTION OR QUALIFICATION OF RESULTS . The laboratory shall handle results for samples received with insufficient volume to complete the requested analyses, samples received beyond holding time, samples received improperly preserved, samples received in inappropriate containers, or samples received showing evidence that the samples have not been collected according to approved protocols as follows:

(a) Drinking water samples shall be rejected for analysis unless the laboratory has documented instructions from the client to proceed with analyses and all reported results are accompanied by a disclaimer attesting that the results may not be used to determine or evaluate compliance with the safe drinking water act.

(b) Non-drinking water samples shall be rejected for analysis or appropriately qualified.

(5) SAMPLES REQUIRING REANALYSIS OR QUALIFICATION OF RESULTS. Samples shall be re-analyzed or the sample results qualified when any of the following occur:

(a) The absolute value of the concentration of an analyte in the ICB exceeds its LOD.

(b) A CCV standard exceeds limits.

(c) The absolute value of the concentration of an analyte in the CCB or method blank exceeds the criteria specified in s. NR 149.48 (5) (d).

(d) An LCS exceeds limits.

(e) An MS or MSD exceed limits and are required by method, regulation, or covered program unless the laboratory can demonstrate that only the parent sample was affected, then only the affected sample needs to be reanalyzed or its results qualified.

(f) Sample replicates exceed limits and are required by method, regulation, or covered program, unless the laboratory can demonstrate that only the sample used to prepare replicates was affected, then only the affected sample needs to be reanalyzed or its results qualified.

(g) Surrogates or internal standard recoveries exceed limits, unless the failures result from matrix interference, reanalysis is not required but the laboratory shall qualify the results of the affected samples.

(h) For ICP and ICP/MS technologies, the concentration of a non-spiked element in an interference check sample exceeds its limit of quantitation.

Note: The examples for qualifying data listed in this section are common situations. Other situations may exist that could require qualification of data.

NR 149.48 Quality control requirements for chemical testing. (1) GENERAL REQUIREMENTS.

(a) A laboratory shall establish a quality control program that includes the analysis of appropriate samples, such as method blanks, LCS, MS, MSD, replicates, surrogate spikes, and analytical protocols, such as detection limit studies and confirmatory techniques. These quality control procedures shall be used to assess any of the following:

1. The level of background contamination associated with the preparation and analysis of all samples.
2. The sensitivity of all tests performed.
3. The level of control of an entire analytical system.
4. The bias contributed to sample results by all preparation and analysis steps.
5. The reproducibility of test results.
6. The selectivity of test methods.

(b) A laboratory may not adjust or correct the sample results by the recoveries of associated LCS, MS, or surrogates, unless otherwise allowed by regulation, method, or covered program. A laboratory may not subtract analyte concentrations found in method blanks from sample results unless otherwise allowed by regulation, method, or covered program.

(c) A laboratory shall document deviations from the laboratory's quality system or exceedances of quality control samples, and to the extent the department's data systems allow, be communicated with the results to the department.

(d) A laboratory shall establish procedures for identifying and documenting preparation batches that facilitate determining compliance with the frequencies of quality control samples required under this chapter.

(2) LOD.

(a) A laboratory shall determine the LOD for all tests performed except for any of the following:

1. Biochemical oxygen demand and carbonaceous biochemical oxygen demand.

2. Tests for which analyzing a fortified sample is impossible or impractical.

3. Titrimetric tests.

4. Gravimetric tests, other than oil and grease as HEM.

(b) A laboratory shall determine the LOD of an analyte annually by 40 CFR, Part 136, Appendix B. All sample-processing steps of a method shall be included in the determination of a LOD.

(c) The LOD shall be adjusted when the sample amounts used are different than those used for the LOD determination.

(d) For tests exempted from performing an LOD under subpar. (a) above, the laboratory shall establish a reporting limit or an estimate of a test's sensitivity based on the intended use of the data for a given application.

(e)The LOD shall be determined each time there is a change in a method or instrumentation that affects the sensitivity of an analysis.

(f) The laboratory shall have a procedure to verify that the LOD is realistically achievable.

Note: See the determinative LOD guidance provided on the Wisconsin department of natural resources laboratory accreditation program website.

(g) If an annual LOD verification determines that the LOD is within 0.5 to 2 times the existing LOD the laboratory may continue to use the existing LOD.

(h) For HRGC/MS technology the estimated detection limit is defined in SW 846 8290A and is equivalent to the LOD.

(3) LOQ.

(a) A laboratory shall establish the LOQ for all tests performed except for those exempted from an LOD under s NR 149.48 (2) (a).

(b) The LOQ shall be established as 10/3 the LOD.

(4) REPORTING LIMITS. (a) Reporting limits are reserved for those analytes for which LODs are not appropriate.

(b) For biochemical oxygen demand and carbonaceous biochemical oxygen demand, the minimum reporting limit is 2 mg/L which is based on a 300 mL sample volume. When no dilution is equal to 300 mL, the reporting limit shall be adjusted based on the lowest dilution reported.

(c) For total suspended solids, the reporting limit shall be determined using the following formula: Reporting Limit (mg/L) = 1000 / (sample volume filtered in mL).

(5) METHOD BLANK.

(a) The laboratory shall process method blanks along with and under the same conditions, including all sample preparation steps, as the associated samples in a preparation batch.

Note: Method blanks are not required for analysis of pH, alkalinity, acidity, conductivity, and solids determinations.

(b) The laboratory shall process method blanks at a frequency of at least one per preparation batch up to 20 environmental samples in a batch. When samples are analyzed by methods that do not require a preparation step before analysis, a blank shall be analyzed at the frequency of one per analytical batch up to 20 environmental samples.

(c) Whenever the absolute value of the concentration of the method blank contains analytes of interest greater than the LOD, the laboratory shall evaluate the nature of the interference and its effect on each sample in a preparation batch.

(d) The acceptance criteria for method blanks are analyte and sample specific and are established based on the highest of any of the following:

1. The limit of detection.

2. Five percent of the regulatory limit for that analyte.

3. Ten percent of the measured concentration in the sample.

(6) LCS.

(a) Unless otherwise exempted by this subsection, the laboratory shall process an LCS at a frequency of at least one sample per preparation batch up to 20 environmental samples, along with and under the same conditions as the associated samples in a preparation batch. These conditions shall include all sample preparation steps, except for leaching procedure extractions.

Note: Leaching procedure leachates are fortified after the leaching step is completed.

(b) The laboratory shall fortify the LCS for the biochemical oxygen demand and carbonaceous biochemical oxygen demand tests with a mixture of glucose - glutamic acid as specified in approved methods of analysis. These LCS shall be processed at a frequency of at least one sample per analytical batch for a laboratory that analyzes more than 20 samples per week. A laboratory that analyzes fewer than 20 samples per week shall analyze one LCS per week.

(c) The laboratory is not required to process an LCS for tests for which analyzing a fortified sample is impossible or impractical.

Note: An LCS need not be analyzed for the following tests: pH, solids determinations, chlorophyll a, and color.

(d) The LCS shall be fortified with the analytes specified by regulation, method, covered program or all reported analytes, except as allowed in par (e).

(e) For analyses of polychlorinated biphenyls, the laboratory shall fortify an LCS with at least one aroclor per preparation batch. For other tests that determine analytes with responses that encompass more than one chromatographic peak, as in the case of toxaphene and chlordane, the laboratory may fortify an LCS with a single multi-peak analyte per preparation batch. The laboratory shall ensure that all multi-peak analytes detectable by a method are fortified in an LCS at least once every year that any of those analytes are reported at a detectable concentration.

(7) QUALITY CONTROL SAMPLES ACCEPTANCE CRITERIA.

(a) The laboratory shall compute the recovery of each fortified analyte in an LCS.

(b) For biochemical oxygen demand and carbonaceous biochemical oxygen demand, the LCS is prepared based on a mixture of 150 mg/L each, of glucose and glutamic acid. The acceptance criteria for the LCS shall be 198 plus or minus 30.5 mg/L or 167.5 to 228.5 mg/L.

(c) When the method, regulation, or covered program do not specify acceptance limits, the laboratory shall evaluate LCS recoveries and generate control limits, following exclusion of outliers using a recognized statistical technique, using the mean plus or minus 3 times the sample standard deviation.

(d) Annually, the laboratory shall review its in-house generated quality control limits and update those limits whenever the performance characteristics change. When a laboratory generates its own quality control limits using historical data, the laboratory shall perform a recognized statistical outlier determination and any identified outliers shall be removed from the data set prior to calculating quality control limits.

(e) In lieu of using calculated quality control limits, the laboratory may opt to use the CCV standard limits.

(8) SELECTIVITY. The laboratory shall establish procedures to confirm the detections of organic analytes determined by technologies that, unlike mass spectrometry or diode array liquid chromatography, do not provide a positive unique identification when a covered program requires it or when the history of a sample source does not suggest the likely presence of the detected analyte.

(a) The laboratory shall develop and document acceptance criteria for chromatographic retention time windows which consider retention time shifts.

(b) The laboratory shall document acceptance criteria for mass spectral tuning.

NR 149.50 Technology requirements

(1) OXYGEN DEMAND ASSAYS (BOD OR CBOD).

(a) The environmental conditions for the analysis of biochemical oxygen demand and carbonaceous biochemical oxygen demand shall be 17 to 23 °C.

(b) When dissolved oxygen meters are calibrated using a water-saturated air or air-saturated water standard, the laboratory shall verify concentrations of those standards in mg/L by comparing those concentrations to the dissolved oxygen theoretical saturation point. The measured concentration shall be at or near the theoretical saturation point.

(c) The laboratory shall use the theoretical saturation point, based on temperature and barometric pressure, on each day of analysis, to assess supersaturation.

(d) The laboratory shall properly treat supersaturated samples before an initial dissolved oxygen measurement is performed.

(e) When the laboratory uses pipets to deliver sample volumes, the tips shall be manufactured to be wide-bore.

(f) When the laboratory analyzes multiple blanks and glucose - glutamic acid standards in an analytical batch, each blank and glucose - glutamic acid standard analyzed shall be assessed individually and associated to the entire analytical batch unless individual blanks and individual glucose - glutamic acid standards are clearly documented to be traceable to specific groups of 20 samples.

(g) The laboratory shall seed disinfected samples and nitrogenous demand inhibited samples.

(h) The laboratory may not add nitrogenous demand inhibitor to the glucose - glutamic acid standard, to seed material, or method blanks.

(i) The laboratory shall use sample volumes for dilutions that are sufficient to expect 2 mg/L depletion.

(j) When equipment with multiple dissolved oxygen probes is employed, the laboratory shall calibrate each probe. Sample records shall be traceable to the probe used.

(k) The laboratory shall calibrate optical dissolved oxygen probes on each day of use.

(l) The laboratory shall use local barometric pressure which has not been adjusted to sea level.

(m) The laboratory shall use residual chlorine strips that have a minimum detection capability of 0.1 mg/L.

(2) COLORIMETRIC OR TURBIDIMETRIC.

(a) Unless otherwise exempted by method, the laboratory shall use calibration blanks in the initial calibration of colorimetric or turbidimetric analyses and those calibration blanks shall be assigned the measured response.

(b) When closed vials are digested using block digesters for total phosphorus, the laboratory shall perform the digestion at 150 ± 2 °C for a minimum of 30 minutes. When open vials are digested for total phosphorus, the laboratory shall perform the digestion by boiling the samples for a minimum of 30 minutes or until the initial volume has been reduced by at least 80% without going dry.

(c) The laboratory may not use method blank subtractions in determination of final concentrations.

(d) When the laboratory uses residual chlorine strips, the residual chlorine strips shall have a minimum detection capability of 0.1 mg/L.

(e) When the laboratory uses sulfide strips, the sulfide strips shall have a minimum detection capability of 10 mg/L.

(f) The laboratory may not dilute samples after the color reagent has been added to the samples.

(g) The laboratory shall process hexavalent chromium standards the same as samples.

(3) ELECTROMETRIC ASSAYS (I.E. ION−SELECTIVE ELECTRODE).

(a) When the laboratory performs electrometric assays, the laboratory shall perform an initial calibration each day of analysis.

(b) The laboratory shall analyze, except for pH, an ICV standard to verify each initial calibration.

(c) The slope acceptance criterion, between every two standards, shall be 54 to 60 mV. The slope acceptance criterion for certain high performance probes shall be 54 to 65 mV.

(d) The laboratory shall determine, for conductivity analyses, the cell constant annually.

(4) GRAVIMETRIC ASSAYS – RESIDUE (SOLIDS).

(a) The laboratory may not use Buchner funnels and Gooch crucibles for determination of total suspended solids or total dissolved solids.

(b) The laboratory shall use tips that were manufactured to be wide-bore when pipets are used to deliver sample volumes for total solids and total suspended solids.

(5) GRAVIMETRIC ASSAYS – OIL& GREASE AS HEXANE EXTRACTABLE MATERIALS (HEM).

(a) When using the solid phase extraction technique, the laboratory may not allow polar solvents to come into contact with the sample.

(b) The laboratory shall use anhydrous activated silica gel for silica gel-treated determinations.

(6) TITRIMETRIC OR POTENTIOMETRIC TITRATION ASSAYS.

(a) When standardization is required by method, the laboratory shall standardize all titrants monthly, unless all of the following are met:

1. Unused titrant is never poured back into the original container.

2. Titrants shall always be protected from light.

3. LCS recovery control limits shall be set at 90 to 110% and the recovery is achieved.

(7) NONDISPERSIVE IR OR MICROCOULOMETRY.

(a) For total organic carbon determinations, the laboratory shall perform an inorganic carbon removal check with each analysis batch.

(b) For samples with results greater than or equal to the LOQ, the laboratory shall perform duplicate injections until the relative percent difference is 10% or less.

(c) For sample results greater than or equal to the LOQ, and when methods require quadruplicate injections, the standard deviation of the replicates shall be less than 10%.

(d) When the method requires quadruplicate injections, the laboratory shall report the mean and range of results.

(8) ION CHROMATOGRAPHY (IC). The width of the retention time window that the laboratory uses to make identifications shall be based upon measurements of actual retention time variations of standards over the course of a day, unless analyst experience provides for another defensible protocol.

(9) FLAME ATOMIC ABSORPTION SPECTROPHOTOMETRY (FLAA).

(a) The laboratory shall perform at least two aspirations for all samples, standards, and quality control samples and the laboratory shall use the average for calculating results.

(b) When sample concentrations are greater than the limit of quantitation, the laboratory shall use a control limit of 10% or less for the relative percent difference between replicate aspirations.

(c) The laboratory shall include the same acid types and concentrations in calibration standards as those used in samples.

(10) GRAPHITE FURNACE ATOMIC ABSORPTION SPECTROPHOTOMETRY (GFAA).

(a) The laboratory shall use at least two firings for all samples, standards, and quality control samples.

(b) When sample concentrations are greater than the limit of quantitation, the laboratory shall use a control limit of 10% or less for the relative standard deviation of replicate firings.

(c) When elements are measured at wavelengths lower than 200 nm, the laboratory shall analyze the samples with an instrument equipped with Zeeman background correction or equivalent.

(d) The laboratory shall include the same acid types and concentrations in calibration standards as those used in samples.

(11) COLD VAPOR ATOMIC ABSORPTION SPECTROPHOTOMETRY (CVAA). The laboratory shall ensure that potassium permanganate is present after the two hour digestion for Hg or the sample shall be redigested using a smaller sample amount until potassium permanganate remains. Or instead, the laboratory could choose to add more potassium permanganate to the affected samples and method blank and digest for an additional two hours.

(12) INDUCTIVELY COUPLED PLASMA EMISSION SPECTROPHOTOMETRY (ICP).

(a) The laboratory shall perform a spectral interference identification study before performing any sample analysis using the following single element standards: Ag, Al, As, B, Ba, Be, Ca, Cd, Ce, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, SiO, Sn, Sr, Ti, Tl, V, and Zn. When other interferences have been identified, the laboratory shall perform appropriate spectral interference identification studies for those interferences. The laboratory shall analyze the interfering elements to identify potential interelement interferences for each mode and wavelength used. This requirement applies to each instrument used for analysis.

(b) The concentration of single element standards used in the spectral interference identification study shall be at or greater than the maximum concentrations encountered in samples.

(c) At the beginning of each analysis day, the laboratory shall verify that interference corrections and background correction are working properly through the analysis of interference check standards. The interference check standards shall include all of the identified interferences at the maximum concentrations encountered in samples.

(d) Interference correction is only valid to the concentration used in the spectral interference identification study. Samples with interferences present greater than that concentration shall be reanalyzed at a dilution.

(e) The concentrations of all of the non-spiked elements in the interference check standards must be less than the LOQ.

(f) Adjusting background correction shall require re-processing of the initial calibration, reassessment of the LOD determination, the LOQ, and any interference corrections utilized.

(13) INDUCTIVELY COUPLED PLASMA–MASS SPECTROMETRY (ICP/MS).

(a) Only those masses listed in methods may be used for identification and quantitation unless the laboratory has supporting data that identifies the potential interfering species for the masses used and the correction equations needed to resolve the interferences are employed.

(b) All quality control samples must be performed on the isotope used for identification and quantitation.

(c) At the beginning of each analysis day, the laboratory shall verify that interference corrections are working properly through the analysis of interference check standards. The interference check standards shall include Al, C, Ca, Cl, Fe, K, Mg, Mo, Na, P, S, and Ti.

(d) Interference correction is only valid to the concentration used in the interference check standards. The laboratory shall reanalyze samples at a dilution when the interfering elements are present at a concentration greater than the concentration used in the interference correction study.

(e) The concentrations of all of the non-spiked elements in the interference check standards must be less that the LOQ.

(f) The laboratory shall use one or more internal standards with an atomic mass no more than 50 amu from the target mass of each element unless the internal standard is native to the sample.

(14) GAS CHROMATOGRAPHY (GC).

(a) For non-aqueous samples, the laboratory shall ensure that the calibration standards shall contain the same preservative type as the samples, such as methanol, sodium bisulfate, and reagent water.

(b) When the laboratory analyzes multi-peak compounds, such as aroclors, toxaphene, and technical chlordane, the laboratory shall document in its standard operating procedures all of the following critical steps in identification and quantitation of these compounds:

1. For each compound reported, the peaks that the laboratory has chosen to identify the compound and to quantitate the compound.

2. For each compound reported, how the laboratory quantitates the compounds when the compound exhibits weathering, degradation, or positive interferences.

3. For aroclors, how the laboratory quantitates each aroclor when more than one aroclor is present in the sample.

(15) GAS CHROMATOGRAPHY–MASS SPECTROMETRY (GC/MS).

(a) The laboratory shall update the mass spectral reference library of reported compounds using its own instrument operating conditions and standards.

(b) The laboratory shall meet full scan tune requirements before selective ion monitoring analysis begins.

(c) For non-aqueous samples, the laboratory shall ensure that the calibration standards shall contain the same preservative type as the samples, such as methanol, sodium bisulfate, and reagent water.

(16) LIQUID CHROMATOGRAPHY (LC). The laboratory shall update the spectral array reference library of reported compounds using its own instrument operation conditions and standards when diode array detectors are used.

(17) LIQUID CHROMATOGRAPHY–MASS SPECTROMETRY (LC/MS). The laboratory shall update the mass spectral reference library of reported compounds using its own instrument operating conditions and standards.

(18) HAZARDOUS WASTE CHARACTERISTICS.

(a) The laboratory shall verify the rotation rates of rotators used for the toxicity characteristic leaching procedure and document the results prior to each use with the samples included.

(b) The laboratory shall stir samples during pH measurements for toxicity characteristic leaching procedure extractions fluid type determinations.

(c) The laboratory shall perform an LCS for each batch of samples analyzed for flashpoint analysis.

(19) PREPARATORY METHODS.

(a) The laboratory shall fortify any quality control sample prior to the addition of the preparation reagents.

(b) The laboratory shall perform microwave preparations with instruments that utilize temperature feedback control.

APPENDIX I

TABLE 1A: List of analytes in aqueous and non-aqueous matrices by class and technology.
Analytes are available in both the aqueous and non-aqueous matrices unless identified by footnote.

Oxygen Demand assays (BOD or cBOD) Technology

Class: General Chemistry			
	Biochemical Oxygen Demand (BOD)[1]	Carbonaceous Biochemical Oxygen Demand (cBOD)[1]	

Colorimetric or Turbidimetric Technology

Class: General Chemistry			
	Alkalinity[1]	Fluoride	Phosphorus, Total
	Ammonia as N	Hardness, Total as $CaCO_3$[1]	Silica[1]
	Chemical Oxygen Demand[1] (COD)	Kjeldahl Nitrogen, Total	Sulfate
	Chloride	Nitrate	Sulfide
	Chlorine, Total Residual (TRC)[1]	Nitrate + Nitrite	Surfactants[1]
	Chlorophyll[1]	Nitrite	Turbidity[1]
	Cyanide, Available	Orthophosphate	
	Cyanide, Total	Phenolics, Total	
Class: Metals			
	Chromium (Hexavalent)		

Electrometric Assays (i.e. ion-selective electrode) Technology

Class: General Chemistry			
	Ammonia as N	Fluoride	pH
	Chloride	Kjeldahl Nitrogen, Total	Specific Conductance
	Chlorine, Total Residual (TRC)[1]	Nitrate	Sulfide
	Cyanide, Total	Oxygen, Dissolved[1]	

Gravimetric Assays – Residue (solids) Technology

Class: General Chemistry			
	Residue, Filterable (TDS)[1]	Residue, Total	Residue, Volatile, Nonfilterable (TVSS)[1]
	Residue, Nonfilterable (TSS)[1]	Residue, Volatile (TVS)	

Extraction/Gravimetric Assays – Oil & Grease as Hexane Extractable Materials (HEM) Technology

Class: General Chemistry		
	Oil&Grease as Hexane Ext. Material (HEM)[1]	

Titrimetric or Potentiometric Titration Assays Technology

Class: General Chemistry			
	Acidity as CaCO3[1]	Chloride	Kjeldahl Nitrogen, Total
	Alkalinity[1]	Chlorine, Total Residual (TRC)[1]	Sulfide
	Ammonia as N	Cyanide, Available	Sulfides, Acid-Soluble and Acid-Insoluble
	Bromide	Cyanide, Total	Sulfite[1]
	Chemical Oxygen Demand (COD)	Hardness, Total as CaCO3[1]	Calcium
	Percent Water by Karl Fischer Titration[2]		

Flow Injection - Gas Diffusion – Amperometry Technology

Class: General Chemistry			
	Cyanide, Available[1]	Cyanide, Total[1]	

NonDispersive Infrared (NDIR) or Microcoulometry Technology

Class: General Chemistry			
	Organic Halides (TOX and AOX)		
	Organic Carbon, Total (TOC)		

Ion Chromatography (IC) Technology

Class: General Chemistry			
	Ammonia as N	Fluoride	Nitrite
	Bromide	Nitrate	Orthophosphate
	Chloride	Nitrate + Nitrite	Sulfate

Flame Atomic Absorption Spectrophotometry (FLAA) Technology

Class: General Chemistry		
	Hardness, Total as $CaCO_3$[1]	
Class: Metals		
	Aluminum	Iridium	Potassium
	Antimony	Iron	Rhodium

	Barium	Lead	Ruthenium
	Beryllium	Lithium	Silver
	Bismuth	Magnesium	Sodium
	Cadmium	Manganese	Strontium
	Calcium	Molybdenum	Thallium
	Chromium (Total)	Nickel	Tin
	Cobalt	Osmium	Titanium
	Copper	Palladium	Vanadium
	Gold	Platinum	Zinc

Flame Photometry Spectrophotometry (FP) Technology

Class: Metals

	Calcium	Potassium	Sodium
	Magnesium		

Gaseous Hydride Atomic Absorption Spectrophotometry Technology

Class: Metals

	Antimony	Arsenic	Selenium

Graphite Furnace Atomic Absorption Spectrophotometry (GFAA) Technology

Class: Metals

Aluminum	Gold	Platinum
Antimony	Iridium	Rhodium
Arsenic	Iron	Ruthenium
Barium	Lead	Selenium
Beryllium	Lithium	Silver
Bismuth	Manganese	Thallium
Cadmium	Molybdenum	Tin
Chromium (Total)	Nickel	Titanium
Cobalt	Osmium	Vanadium
Copper	Palladium	Zinc

Cold Vapor Atomic Absorption Spectrophotometry (CVAA) Technology

Class: Metals

Mercury	Mercury, Low Level	

Cold Vapor Atomic Fluorescence Spectrophotometry (CVAFS) Technology

Class: Metals

	Mercury	Mercury, Low Level	

Thermal Decomposition Atomic Absorption Spectrophotometry (TDAA) Technology

Class: Metals

	Mercury	Mercury, Low Level	

Inductively Coupled Plasma Emission Spectrophotometry (ICP) Technology

Class: General Chemistry			
	Hardness, Total as $CaCO_3$[1]	Phosphorus, Total[2]	Silica[1]
Class: Metals			
	Aluminum	Iridium	Ruthenium
	Antimony	Iron	Selenium
	Arsenic	Lead	Silicon
	Barium	Lithium	Silver
	Beryllium	Magnesium	Sodium
	Bismuth	Manganese	Strontium
	Boron	Molybdenum	Thallium
	Cadmium	Nickel	Tin
	Calcium	Osmium	Titanium
	Chromium (Total)	Palladium	Tungsten
	Cobalt	Platinum	Vanadium
	Copper	Potassium	Zinc
	Gold	Rhodium	Zirconium

Inductively Coupled Plasma-Mass Spectrometry (ICP/MS) Technology

Class: Metals			
	Aluminum	Iron	Selenium
	Antimony	Lead	Silicon
	Arsenic	Lithium	Silver
	Barium	Magnesium	Sodium
	Beryllium	Manganese	Strontium
	Bismuth	Mercury	Thallium
	Boron	Molybdenum	Tin
	Cadmium	Nickel	Titanium
	Calcium	Osmium	Tungsten
	Chromium (Total)	Palladium	Vanadium
	Cobalt	Platinum	Zinc
	Copper	Potassium	Zirconium
	Gold	Rhodium	
	Iridium	Ruthenium	

Gas Chromatography (GC) Technology

Class: BNA - Phenols			
	2,3,4,6-Tetrachlorophenol	3,4,5-Trichlorocatechol	4-Chloroguaiacol
	2,3,5,6-Tetrachlorophenol	3,4,5-Trichloroguaiacol	4-Chlorophenol
	2,4,5-Trichlorophenol	3,4,6-Trichlorocatechol	4-Methylphenol (p-Cresol)
	2,4,6-Trichlorophenol	3,4,6-Trichloroguaiacol	4-Nitrophenol
	2,4-Dichlorophenol	3,4-Dichlorocatechol	5,6-Dichlorovanillin
	2,4-Dimethylphenol	3,4-Dichloroguaiacol	5-Chlorovanillin
	2,4-Dinitrophenol	3,6-Dichlorocatechol	6-Chlorovanillin
	2,6-Dichlorophenol	3-Methylphenol (m-Cresol)	Dinoseb (2-sec-butyl-4,6-Dinitrophenol)

2,6-Dichlorosyringaldehyde	4,5,6-Trichloroguaiacol	Pentachlorophenol
2-Chlorophenol	4,5-Dichlorocatechol	Phenol
2-Chlorosyringaldehyde	4,5-Dichloroguaiacol	Tetrachlorocatechol
2-Cyclohexyl-4,6-dinitro-phenol	4,6-Dichlorocatechol	Tetrachloroguaiacol
2-Methyl-4,6-dinitrophenol	4,6-Dichloroguaiacol	Trichlorosyringol
2-Methylphenol (o-Cresol)	4-Chloro-3-methylphenol (4-Chloro-m-cresol)	
2-Nitrophenol	4-Chlorocatechol	
Class: BNA - Benzidines		
3,3'-Dichlorobenzidine	3,3'-Dimethylbenzidine	
3,3'-Dimethoxybenzidine	Benzidine	
Class: BNA - Chlorinated Hydrocarbons		
1,2,4,5-Tetrachlorobenzene	1,4-Dichlorobenzene	Hexachlorocyclopentadiene
1,2,4-Trichlorobenzene	Benzyl chloride	Hexachloroethane
1,2-Dichlorobenzene	Hexachlorobenzene	Pentachlorobenzene
1,3-Dichlorobenzene	Hexachlorobutadiene	
Class: BNA - Explosive Residues		
1,3,5-Trinitrobenzene	2,4-Dinitrotoluene	Nitrobenzene
1,3-Dinitrobenzene	2,6-Dinitrotoluene	
Class: BNA - Haloethers		
4-Bromophenyl phenyl ether	Bis(2-chloroethoxy)methane	Bis(2-chloroisopropyl) ether
4-Chlorophenyl phenyl ether	Bis(2-chloroethyl) ether	
Class: BNA - Nitroaromatics		
1,2-Dinitrobenzene	1,4-Dinitrobenzene	Isophorone
1,3-Dinitrobenzene	1,4-Naphthoquinone	Pentachloronitrobenzene (PCNB)
Class: BNA - Nitrosamines		
N-Nitrosodiethylamine	N-Nitrosodi-n-propylamine	N-Nitrosomorpholine
N-Nitrosodimethylamine	N-Nitrosodiphenylamine	N-Nitrosopiperidine
N-Nitrosodi-n-butylamine	N-Nitrosomethylethylamine	N-Nitrosopyrrolidine
Class: BNA - Phthalates		
Bis(2-ethylhexyl)phthalate	Diethyl phthalate	Di-n-butyl phthalate
Butyl benzyl phthalate	Dimethyl phthalate	Di-n-octyl phthalate

Class: Pesticides - Acid		
2,4,5-T	Chloramben	Dinoseb (2-sec-butyl-4,6-Dinitrophenol)
2,4-D	Chlorthal (Dacthal di-acid, DCPA di-acid)	MCPA
2,4-DB	Clopyralid	MCPB
2,4-DB Salts and Esters	Dalapon	MCPP (Mecoprop)
3,5-Dichlorobenzoic acid	Dicamba	Pentachlorophenol
4-Nitrophenol	Dichlorprop (2,4-DP)	Picloram
5-Hydroxydicamba	Dichlorprop salts and Esters	Silvex (2,4,5-TP)
Acifluorfen	Diclofop	Triclopyr
Class: Pesticides - Organochlorine		
## PESTICIDES, ORGANOCHLORINE (group)		
4,4'-DDD	Chloroneb	Heptachlor
4,4'-DDE	delta-BHC	Heptachlor Epoxide
4,4'-DDT	Dichlone	Isodrin
Aldrin	Dieldrin	Kepone
alpha-BHC	Endosulfan I	Methoxychlor
beta-BHC (ß-BHC)	Endosulfan II	Mirex
Captafol	Endosulfan Sulfate	Pentachloronitrobenzene (PCNB)
Captan	Endrin	Perthane
Chlordane (alpha)	Endrin Aldehyde	Strobane
Chlordane (gamma)	Endrin Ketone	Toxaphene
Chlordane (Technical)	gamma-BHC (Lindane)	
Class: Pesticides - Nitrogen		
Acetochlor	Chlorothalonil	Norflurazon
Alachlor	Dimethenamid	Pendimethalin
Aspon	Ethalfluralin	Pronamide
Benfluralin	Fenarimol	Propachlor
Bentazon	Hexazinone	Propanil
Bromacil	Isopropalin	Terbacil
Bromoxynil octanoate	Metolachlor	Triadimefon
Butachlor	Metribuzin	Trifluralin
Butylate	Napropamide	
Class: Pesticides - Organophosphorus		
Acephate	Dioxathion	Parathion (Parathion Ethyl)
Azinphos ethyl	Disulfoton	Parathion Methyl
Azinphos methyl (Guthion)	EPN	Phorate
Bolstar	Ethion	Phosalone
Carbophenothion	Ethoprop	Phosmet (Imidan)

	Chlorfenvinphos	Famphur	Phosphamidon
	Chlorpyrifos	Fenitrothion	Ronnel
	Chlorpyrifos Methyl	Fensulfothion	Sulfotepp (Tetraethyl dithiopyrophosphate)
	Coumaphos	Fenthion	TEPP (Tetraethyl pyrophosphate)
	Crotoxyphos	Fonofos	Terbufos
	DEF (Butifos)	Hexamethylphosphoramide	Tetrachlorvinphos (Stirofos)
	Demeton-O	Leptophos	Thionazin (O,O-Diethyl O-2-pyrazinyl phosphorothioate)
	Demeton-S	Malathion	Tokuthion (Prothiofos)
	Diazinon	Merphos	Trichloronate
	Dichlofenthion	Methamidophos	Trichlorphon
	Dichlorvos (DDVP)	Mevinphos	Tri-o-cresylphosphate (TOCP)
	Dicrotophos	Monocrotophos	
	Dimethoate	Naled	
Class: Pesticides - Triazine			
	Ametryn	Deethylatrazine	Propazine
	Anilazine	Deisopropylatrazine	Simazine
	Atraton	Diaminoatrazine	Terbutryn
	Atrazine	Prometon	
	Cyanazine	Prometryn	
Class: Pesticides - Other			
	1,2-Dibromo-3-chloropropane (DBCP)	Permethrin	Vapam
Class: Persistent Organic Pollutants			
	## PCB as AROCLORS (group)		
	## PCB CONGENERS (group)		
Class: Volatile Organics			
	## VOLATILE ORGANICS [VOC] (group)		
	1,1,1,2-Tetrachloroethane	Acetone	Isopropyl alcohol (2-Propanol)
	1,1,1-Trichloroethane	Acetonitrile	Isopropylbenzene
	1,1,2,2-Tetrachloroethane	Acrolein	Malononitrile
	1,1,2-Trichloroethane	Acrylonitrile	Methacrylonitrile
	1,1-Dichloroethane	Allyl Alcohol	Methanol
	1,1-Dichloroethylene	Allyl Chloride	Methyl Acrylate
	1,1-Dichloropropene	Benzene	Methyl ethyl ketone (MEK,2-Butanone)
	1,2,3-Trichlorobenzene	Bromoacetone	Methyl Methacrylate
	1,2,3-Trichloropropane	Bromobenzene	Methyl tert-Butyl Ether

			(MtBE)
	1,2,4-Trichlorobenzene	Bromochloromethane	Methylene Chloride
	1,2,4-Trimethylbenzene	Bromodichloromethane	m-Xylene
	1,2-Dibromo-3-chloropropane (DBCP)	Bromoform	Naphthalene
	1,2-Dibromoethane (EDB)	Bromomethane (Methyl bromide)	n-Butyl Alcohol (1-Butanol)
	1,2-Dichlorobenzene	Carbon Disulfide	n-Butylbenzene
	1,2-Dichloroethane	Carbon Tetrachloride	n-Propylbenzene
	1,2-Dichloroethene (cis)	Chlorobenzene	o-Xylene
	1,2-Dichloroethene (trans)	Chloroethane	Paraldehyde
	1,2-Dichloropropane	Chloroform	p-Isopropyltoluene
	1,3,5-Trimethylbenzene	Chloromethane (Methyl chloride)	Propargyl Alcohol
	1,3-Dichloro-2-propanol	Chloromethyl methyl ether	Propionitrile (Ethyl Cyanide)
	1,3-Dichlorobenzene	Chloroprene	Propylene Glycol
	1,3-Dichloropropane	Crotonaldehyde	p-Xylene
	1,3-Dichloropropylene (cis)	Dibromochloromethane	sec-Butylbenzene
	1,3-Dichloropropylene (trans)	Dibromomethane (Methylene bromide)	ß-Propiolactone
	1,3-Propanediol	Dichlorodifluoromethane	Styrene
	1,4-Dichlorobenzene	Diethyl ether (Ethyl ether)	t-Butyl Alcohol
	1,4-Dioxane	Epichlorohydrin	tert-Butylbenzene
	2,2-Dichloropropane	Ethanol	Tetrachloroethene
	2,3-Dichloropropene	Ethyl Acetate	Toluene
	2-Chloroethanol	Ethyl Methacrylate	Trichloroethene
	2-Chloronaphthalene	Ethylbenzene	Trichlorofluoromethane
	2-Chlorotoluene	Ethylene Glycol	Vinyl Acetate
	2-Hexanone	Ethylene Oxide	Vinyl Chloride
	2-Pentanone	Hexachlorobutadiene	Xylenes, Total
	4-Chlorotoluene	Iodomethane (Methyl iodide)	
	4-Methyl-2-pentanone (Methyl Isobutyl Ketone)	Isobutyl alcohol (2-Methyl-1-propanol)	
	Class: Solvent Scans		
	Qualitative FID Fingerprint		

Gas Chromatography - Mass Spectroscopy (GC/MS) Technology

Class: Base, Neutral, and Acid Extractable Semivolatile Compounds

	## SEMIVOLATILES [BNA] (group)		
Class: BNA -Phenols			
	2,3,4,6-Tetrachlorophenol	3,4,5-Trichlorocatechol	4-Chloroguaiacol
	2,3,5,6-Tetrachlorophenol	3,4,5-Trichloroguaiacol	4-Chlorophenol

	2,4,5-Trichlorophenol	3,4,6-Trichlorocatechol	4-Methylphenol (p-Cresol)
	2,4,6-Trichlorophenol	3,4,6-Trichloroguaiacol	4-Nitrophenol
	2,4-Dichlorophenol	3,4-Dichlorocatechol	5,6-Dichlorovanillin
	2,4-Dimethylphenol	3,4-Dichloroguaiacol	5-Chlorovanillin
	2,4-Dinitrophenol	3,6-Dichlorocatechol	6-Chlorovanillin
	2,6-Dichlorophenol	3-Methylphenol (m-Cresol)	Benzoic Acid
	2,6-Dichlorosyringaldehyde	4,5,6-Trichloroguaiacol	Dinoseb (2-sec-butyl-4,6-Dinitrophenol)
	2-Chlorophenol	4,5-Dichlorocatechol	Pentachlorophenol
	2-Chlorosyringaldehyde	4,5-Dichloroguaiacol	Phenol
	2-Cyclohexyl-4,6-dinitro-phenol	4,6-Dichlorocatechol	Tetrachlorocatechol
	2-Methyl-4,6-dinitrophenol	4,6-Dichloroguaiacol	Tetrachloroguaiacol
	2-Methylphenol (o-Cresol)	4-Chloro-3-methylphenol (4-Chloro-m-cresol)	Trichlorosyringol
	2-Nitrophenol	4-Chlorocatechol	
Class: BNA -Benzidines			
	3,3'-Dichlorobenzidine	3,3'-Dimethylbenzidine	
	3,3'-Dimethoxybenzidine	Benzidine	
Class: BNA - Non-Halogenated Organics			
	1,4-Dioxane	Diethyl Sulfate	p-Benzoquinone
	1-Acetyl-2-thiourea	Diethylstilbestrol	p-Cresidine
	2-Acetylaminofluorene	Dihydrosaffrole	Phenacetin
	2-Aminoanthraquinone	Diphenylamine	Phenobarbital
	2-Hydroxypropionitrile	Ethyl Methanesulfonate	Phthalic anhydride
	4-Chloroaniline	Fluchloralin	Piperonyl Sulfoxide
	4-Dimethylaminoazobenzene	Hydroquinone	Propylthiouracil
	4-Nitroquinoline 1-oxide	Isosafrole	Pyridine
	5,5-Diphenylhydantoin	Maleic anhydride	Resorcinol
	Acetophenone	Mestranol	Safrole
	Aminoazobenzene	Methapyrilene	TEPP (Tetraethyl pyrophosphate)
	Aniline	Methyl Methanesulfonate	Tetraethyl Dithiopyrophosphate
	Aramite	Nicotine	Thionazin (O,O-Diethyl O-2-pyrazinyl phosphorothioate)
	Azobenzene	Nitrofen	Thiophenol (Benzenethiol)
	Benzyl Alcohol	O,O,O-Triethyl phosphorothioate	Toluene Diisocyanate
	Biphenyl	o-Anisidine	Trimethyl Phosphate
	Carbazole	Octamethyl Pyrophosphoramide	Tri-p-tolyl Phosphate
	Dibenzofuran	o-Toluidine	Tris(2,3-dibromopropyl) phosphate

Class: BNA -Chlorinated Hydrocarbons			
	1,2,4,5-Tetrachlorobenzene	2-Chloronaphthalene	Hexachlorocyclopentadiene
	1,2,4-Trichlorobenzene	3-(Chloromethyl)pyridine Hydrochloride	Hexachloroethane
	1,2-Dichlorobenzene	Benzyl chloride	Hexachlorophene
	1,3-Dichlorobenzene	Chlorobenzilate	Hexachloropropene
	1,4-Dichlorobenzene	Hexachlorobenzene	Pentachlorobenzene
	1-Chloronaphthalene	Hexachlorobutadiene	Pentachloroethane
Class: BNA -Explosives Residues			
	1,3,5-Trinitrobenzene	2-Methyl-3-nitroaniline[1]	3-Nitrotoluene[1]
	1,3-Dinitrobenzene	2-Methyl-5-nitroaniline[1]	4-Methyl-2-nitroaniline[1]
	2,3-Dinitrotoluene[1]	2-Methyl-6-nitroaniline[1]	4-Methyl-3-nitroaniline[1]
	2,4-Dinitrotoluene	2-Nitrotoluene[1]	4-Nitrotoluene[1]
	2,5-Dinitrotoluene[1]	3,4-Dinitrotoluene[1]	5-Methyl-2-nitroaniline[1]
	2,6-Dinitrotoluene	3,5-Dinitrotoluene[1]	Nitrobenzene
Class: BNA -Haloethers			
	4-Bromophenyl phenyl ether	Bis(2-chloroethoxy)methane	Bis(2-chloroisopropyl) ether
	4-Chlorophenyl phenyl ether	Bis(2-chloroethyl) ether	
Class: BNA -Nitroaromatics			
	1,2-Dinitrobenzene	2-Methyl-5-nitroaniline[1]	4-Chloro-1,3-phenylenediamine
	1,3,5-Trinitrobenzene	2-Naphthylamine	4-Chloroaniline
	1,3-Dinitrobenzene	2-Nitroaniline	4-Nitroaniline
	1,4-Dinitrobenzene	2-Picoline (2-Methylpyridine)	4-Nitrobiphenyl
	1,4-Naphthoquinone	3-Amino-9-ethylcarbazole	5-Chloro-2-methylaniline
	1,4-Phenylenediamine	3-Nitroaniline	5-Nitroacenaphthene
	1-Naphthylamine	4,4'-Methylenebis (2-chloroaniline)	5-Nitro-o-anisidine
	2,4,5-Trimethylaniline	4,4'-Methylenebis (N,N-dimethylaniline)	5-Nitro-o-toluidine[1]
	2,4-Diaminotoluene	4,4'-Oxydianiline	a,a-Dimethylphenethylamine
	2,4-Dinitrotoluene	4-Aminobiphenyl	Isophorone
	2,6-Dinitrotoluene	4-Chloro-1,2-phenylenediamine	Nitrobenzene
Class: BNA -Nitrosamines			
	N-Nitrosodiethylamine	N-Nitrosodi-n-propylamine	N-Nitrosomorpholine
	N-Nitrosodimethylamine	N-Nitrosodiphenylamine	N-Nitrosopiperidine
	N-Nitrosodi-n-butylamine	N-Nitrosomethylethylamine	N-Nitrosopyrrolidine

Class: BNA -Polynuclear Aromatic Hydrocarbons			
	## PAH (group)		
	1-Methylnaphthalene	Benzo[a]pyrene	Fluoranthene
	2-Methylnaphthalene	Benzo[b]fluoranthene	Fluorene
	3-Methylcholanthrene	Benzo[g,h,i]perylene	Indeno(1,2,3-cd)pyrene
	7,12-Dimethylbenz(a)-anthracene	Benzo[k]fluoranthene	Naphthalene
	Acenaphthene	Chrysene	Phenanthrene
	Acenaphthylene	Dibenz(a,j)acridine	Pyrene
	Anthracene	Dibenzo[a,e]pyrene	
	Benzo[a]anthracene	Dibenzo[a,h]anthracene	
Class: BNA - Phthalates			
	Bis(2-ethylhexyl)phthalate	Diethyl phthalate	Di-n-butyl phthalate
	Butyl benzyl phthalate	Dimethyl phthalate	Di-n-octyl phthalate
Class: Pesticides - Acid			
	2,4,5-T	Clopyralid	MCPB
	2,4-D	Dalapon	MCPP (Mecoprop)
	2,4-DB	Dicamba	Pentachlorophenol
	4-Nitrophenol	Dichlorprop (2,4-DP)	Picloram
	Acifluorfen	Diclofop	Silvex (2,4,5-TP)
	Bromoxynil (Brominal)	Dinoseb (2-sec-butyl-4,6-Dinitrophenol)	Triclopyr
	Chlorthal (Dacthal di-acid, DCPA di-acid)	MCPA	
Class: Pesticides - Organochlorine			
	## PESTICIDES, ORGANOCHLORINE (group)		
	4,4'-DDD	Chlordane (Technical)	gamma-BHC (Lindane)
	4,4'-DDE	delta-BHC	Heptachlor
	4,4'-DDT	Dichlone	Heptachlor Epoxide
	Aldrin	Dieldrin	Isodrin
	alpha-BHC	Endosulfan I	Kepone
	beta-BHC (ß-BHC)	Endosulfan II	Methoxychlor
	Captafol	Endosulfan Sulfate	Mirex
	Captan	Endrin	Pentachloronitrobenzene (PCNB)
	Chlordane (alpha)	Endrin Aldehyde	Toxaphene
	Chlordane (gamma)	Endrin Ketone	
Class: Pesticides - Nitrogen			
	Acetochlor	Chlorothalonil	Norflurazon
	Alachlor	Dimethenamid	Pendimethalin

	Aspon	Ethalfluralin	Pronamide
	Benfluralin	Fenarimol	Propachlor
	Bentazon	Hexazinone	Propanil
	Bromacil	Isopropalin	Terbacil
	Bromoxynil octanoate	Metolachlor	Triadimefon
	Butachlor	Metribuzin	Trifluralin
	Butylate	Napropamide	
Class: Pesticides - OrganoPhosphorus			
	Acephate	Dioxathion	Parathion (Parathion Ethyl)
	Azinphos ethyl	Disulfoton	Parathion Methyl
	Azinphos methyl (Guthion)	EPN	Phorate
	Bolstar	Ethion	Phosalone
	Carbophenothion	Ethoprop	Phosmet (Imidan)
	Chlorfenvinphos	Famphur	Phosphamidon
	Chlorpyrifos	Fenitrothion	Ronnel
	Chlorpyrifos Methyl	Fensulfothion	Sulfotepp (Tetraethyl dithiopyrophosphate)
	Coumaphos	Fenthion	TEPP (Tetraethyl pyrophosphate)
	Crotoxyphos	Fonofos	Terbufos
	DEF (Butifos)	Hexamethylphosphoramide	Tetrachlorvinphos (Stirofos)
	Demeton-O	Leptophos	Thionazin (O,O-Diethyl O-2-pyrazinyl phosphorothioate)
	Demeton-S	Malathion	Tokuthion (Prothiofos)
	Diazinon	Merphos	Trichloronate
	Dichlofenthion	Methamidophos	Trichlorphon
	Dichlorvos (DDVP)	Mevinphos	Tri-o-cresylphosphate (TOCP)
	Dicrotophos	Monocrotophos	
	Dimethoate	Naled	
Class: Pesticides - Triazine			
	Ametryn	Deethylatrazine	Propazine
	Anilazine	Deisopropylatrazine	Simazine
	Atraton	Diaminoatrazine	Terbutryn
	Atrazine	Prometon	
	Cyanazine	Prometryn	
Class: Pesticides - Carbamate			
	Barban	Dazomet	Nabam
	Busan 40	Diallate (cis or trans)	Nabonate
	Busan 85	EPTC (Eptam)	Sulfallate (Thioallate)
	Carbam-S	Ethyl Carbamate	Tebuthiuron
	Carbaryl	KN Methyl	Triallate

	Carbofuran	Mexacarbate	Ziram
Class: Pesticides - Other			
	Endothall	Strychnine	
Class: Persistent Organic Pollutants			
	## PCB as AROCLORS (group)		
	## PCB CONGENERS (group)		
Class: Volatile Organics			
	## VOLATILE ORGANICS [VOC] (group)		
	1,1,1,2-Tetrachloroethane	4-Chlorotoluene	Iodomethane (Methyl iodide)
	1,1,1-Trichloroethane	4-Methyl-2-pentanone (Methyl Isobutyl Ketone)	Isobutyl alcohol (2-Methyl-1-propanol)
	1,1,2,2-Tetrachloroethane	Acetone	Isopropyl alcohol (2-Propanol)
	1,1,2-Trichloroethane	Acetonitrile	Isopropylbenzene
	1,1-Dichloroethane	Acrolein	Malononitrile
	1,1-Dichloroethylene	Acrylonitrile	Methacrylonitrile
	1,1-Dichloropropene	Allyl Alcohol	Methanol
	1,2,3,4-Diepoxybutane	Allyl Chloride	Methyl Acrylate
	1,2,3-Trichlorobenzene	Benzene	Methyl ethyl ketone (MEK,2-Butanone)
	1,2,3-Trichloropropane	Bis(2-chloroethyl)sulfide	Methyl Methacrylate
	1,2,4-Trichlorobenzene	Bromoacetone	Methyl tert-Butyl Ether (MtBE)
	1,2,4-Trimethylbenzene	Bromobenzene	Methylene Chloride
	1,2-Dibromo-3-chloropropane (DBCP)	Bromochloromethane	m-Xylene
	1,2-Dibromoethane (EDB)	Bromodichloromethane	Naphthalene
	1,2-Dichlorobenzene	Bromoform	n-Butyl Alcohol (1-Butanol)
	1,2-Dichloroethane	Bromomethane (Methyl bromide)	n-Butylbenzene
	1,2-Dichloroethene (cis)	Carbon Disulfide	n-Propylamine
	1,2-Dichloroethene (trans)	Carbon Tetrachloride	n-Propylbenzene
	1,2-Dichloropropane	Chlorobenzene	o-Toluidine
	1,3,5-Trimethylbenzene	Chloroethane	o-Xylene
	1,3-Dichloro-2-propanol	Chloroform	Paraldehyde
	1,3-Dichlorobenzene	Chloromethane (Methyl chloride)	Pentachloroethane
	1,3-Dichloropropane	Chloromethyl methyl ether	p-Isopropyltoluene
	1,3-Dichloropropylene (cis)	Chloroprene	Propargyl Alcohol
	1,3-Dichloropropylene (trans)	Crotonaldehyde	Propionitrile (Ethyl Cyanide)
	1,3-Propanediol	Dibromochloromethane	p-Xylene

	1,4-Dichloro-2-butene (trans)	Dibromomethane (Methylene bromide)	Pyridine
	1,4-Dichlorobenzene	Dichlorodifluoromethane	sec-Butylbenzene
	1,4-Dioxane	Dichlorofluoromethane	ß-Propiolactone
	1-Chlorohexane	Diethyl ether (Ethyl ether)	Styrene
	1-Propanol	Diisopropyl ether	t-Butyl Alcohol
	2,2-Dichloropropane	Epichlorohydrin	tert-Butylbenzene
	2,3-Dichloropropene	Ethanol	Tetrachloroethene
	2-Chloroethanol	Ethyl Acetate	Tetrahydrofuran
	2-Chloronaphthalene	Ethyl Methacrylate	Toluene
	2-Chlorotoluene	Ethylbenzene	Trichloroethene
	2-Hexanone	Ethylene Glycol	Trichlorofluoromethane
	2-Nitropropane	Ethylene Oxide	Vinyl Acetate
	2-Pentanone	Hexachlorobutadiene	Vinyl Chloride
	2-Picoline (2-Methylpyridine)	Hexachloroethane	Xylenes, Total
	3-Chloropropionitrile	Hexane, n-	

Liquid Chromatography (LC) Technology

Class: Aldehydes & Ketones			
	Acetaldehyde	Formaldehyde	Octanal
	Acetone	Heptanal	o-Tolualdehyde
	Butanal	Hexanal	Pentanal (Valeraldehyde)
	Crotonaldehyde	Isovaleraldehyde	Propanal (Propionaldehyde)
	Cyclohexanone	m-Tolualdehyde	p-Tolualdehyde
	Decanal	Nonanal	
Class: Pesticides - Acid			
	2,4,5-T	Acifluorfen	Diclofop
	2,4,5-T, butoxyethanol Ester	Bromoxynil (Brominal)	Dinoseb (2-sec-butyl-4,6-Dinitrophenol)
	2,4,5-T, butyl ester	Chloramben	MCPA
	2,4-D	Chlorthal (Dacthal di-acid, DCPA di-acid)	MCPB
	2,4-D, butoxyethanol ester	Clopyralid	MCPP (Mecoprop)
	2,4-D, ethylhexyl ester	Dalapon	Pentachlorophenol
	2,4-DB	Dicamba	Picloram
	2,4-DB salts and Esters	Dichlorprop (2,4-DP)	Silvex (2,4,5-TP)
	3,5-Dichlorobenzoic acid	Dichlorprop salts and Esters	Triclopyr
	4-Nitrophenol		
Class: Pesticides – BNA-Benzidines			
	3,3'-Dichlorobenzidine	Benzidine	
Class: BNA -Non-Halogenated Organics			

	Acrolein	Acrylamide	Acrylonitrile
Class: Pesticides - Carbamate			
	3-Hydroxycarbofuran	Diuron	Monuron
	Aldicarb	Fenuron	Oxamyl (Vydate)
	Aldicarb Sulfone	Fluometuron	Promecarb
	Aldicarb Sulfoxide	Linuron	Propanil
	Baygon (Propoxur)	m-Cumenyl methylcarbamate	Propham
	Bendiocarb	Methiocarb	Siduron
	Carbaryl	Methomyl	Tebuthiuron
	Carbofuran	Metolcarb	Thiodicarb
	Dioxacarb	Mexacarbate	Triallate
Class: BNA -Explosive Residues			
	1,3,5-Trinitrobenzene	2-Amino-4,6-dinitrotoluene	Nitroglycerin
	1,3-Dinitrobenzene	2-Nitrotoluene	PETN (Pentaerythritol tetranitrate)
	2,4,6-Trinitrobenzene	3-Nitrotoluene	Picric Acid (Trinitrophenol)
	2,4,6-Trinitrotoluene	4-Amino-2,6-dinitrotoluene	RDX
	2,4-Diamino-6-nitrotoluene	4-Nitrotoluene	Tetryl
	2,4-Dinitrotoluene	HMX	
	2,6-Dinitrotoluene	Nitrobenzene	
Class: Metals			
	Mercury	Organomercury	
Class: Pesticides - Nitrogen			
	Bentazon	Bromoxynil (Brominal)	Secbumeton
	Bromacil	Butylate	TCMTB
Class: Pesticides - Organophosphorus			
	Dichlorvos (DDVP)	Fensulfothion	Parathion Methyl
	Dimethoate	Merphos	Phorate
	Disulfoton	Monocrotophos	Trichlorphon
	Famphur	Naled	
Class: Polynuclear Aromatic Hydrocarbons			
	## PAH (group)		
	1-Methylnaphthalene	Benzo[a]pyrene	Fluoranthene
	2-Methylnaphthalene	Benzo[b]fluoranthene	Fluorene
	Acenaphthene	Benzo[g,h,i]perylene	Indeno(1,2,3-cd)pyrene
	Acenaphthylene	Benzo[k]fluoranthene	Naphthalene
	Anthracene	Chrysene	Phenanthrene

	Benzo[a]anthracene	Dibenzo[a,h]anthracene	
Class: Pesticides - Other			
	Pyrene	Glyphosate	Pyrethrin II
	Diquat	Paraquat	
	Fenvalerate	Pyrethrin I	
Class: BNA -Phenols			
	Dinoseb (2-sec-butyl-4,6-Dinitrophenol)		

Liquid Chromatography-Mass Spectroscopy (LC/MS) Technology

Class: Pesticides - Acid			
	2,4,5-T	2,4-DB salts and Esters	Dichlorprop salts and Esters
	2,4,5-T, butoxyethanol Ester	3,5-Dichlorobenzoic acid	Dinoseb (2-sec-butyl-4,6-Dinitrophenol)
	2,4,5-T, butyl ester	Acifluorfen	MCPA
	2,4-D	Chloramben	MCPP (Mecoprop)
	2,4-D, butoxyethanol ester	Dalapon	Picloram
	2,4-D, ethylhexyl ester	Dicamba	Silvex (2,4,5-TP)
	2,4-DB	Dichlorprop (2,4-DP)	
Class: BNA - Benzidines			
	3,3'-Dichlorobenzidine	3,3'-Dimethylbenzidine	Benzidine
	3,3'-Dimethoxybenzidine		
Class: Pesticides - Carbamate			
	3-Hydroxycarbofuran	Chloroxuron	Neburon
	Aldicarb	Diuron	o-Chlorophenyl Thiourea
	Aldicarb Sulfone	EPTC (Eptam)	Oxamyl (Vydate)
	Aldicarb Sulfoxide	Fenuron	Pebulate
	Aminocarb	Fenuron-TCA	Propham
	Asulam	Fluometuron	Prosulfocarb
	Barban	Linuron	Siduron
	Baygon (Propoxur)	m-Cumenyl methylcarbamate	Tebuthiuron
	Bendiocarb	Methiocarb	Thiodicarb
	Benomyl	Methomyl	Thiofanox
	Carbaryl	Metolcarb	Thiophanate-methyl
	Carbendazim	Mexacarbate	Triallate
	Carbofuran	Molinate	Vernolate
	Carbosulfan	Monuron	
	Chloropropham	Monuron-TCA	
Class: Pesticides - Nitrogen			

	Alachlor-ESA (Alachlor ethane sulfonic acid)	Bromacil	Propachlor
	Benzoylprop Ethyl	Butylate	
Class: Pesticides - OrganoPhosphorus			
	Dichlorvos (DDVP)	Fensulfothion	Parathion Methyl
	Dimethoate	Merphos	Phorate
	Disulfoton	Monocrotophos	Trichlorphon
	Famphur	Naled	Rotenone

High Resolution Gas Chromatography-Mass Spectrometry (HRGC/MS) Technology

Class: Persistent Organic Pollutants			
	## DIOXINS & FURANS (group)		
	## PCB AROCLORS (group)		
	## PCB CONGENERS (group)		

Hazardous Waste Characteristics Technology

Class: Hazardous Waste characteristics			
	Corrosivity, Toward Steel[2] Corrosivity, Liquids[2]	Ignitability, Setaflash Closed Cup[2] Ignitability, Pensky-Martens Closed Cup[2]	Ignitability, Small Scale Closed Cup[2] Toxicity Characteristic Leaching Procedure (TCLP) Extraction[2, 3]
Solid Waste Leaching Procedures Technology			
Class: Leaching Procedures			
	SPLP Extraction[2,3]	Reagent Water Shake Extraction (ASTM Leach)[2,3]	EPTOX Extraction[2,3]

Whole Effluent Toxicity Assays

Class: Toxicity, Acute			
	Ceriodaphnia dubia[1]	Pimephales promelas[1]	
Class: Toxicity, Chronic			
	Ceriodaphnia dubia[1]	Pimephales promelas[1]	Selanastrum capricornutum[1]

1 = accreditation available in the aqueous matrix only
2 = accreditation available in the non-aqueous only
3 = Leaching extractions require that laboratories also maintain accreditation for any analyte to be determined in the resulting leachate.

TABLE 1B: List of analytes in the drinking water matrix by class and method.

Analyte (group) - Method
Class: Disinfection By-Products
HALOACETIC ACIDS (5) - EPA 552.1
HALOACETIC ACIDS (5) - EPA 552.2
HALOACETIC ACIDS (5) - EPA 552.3
HALOACETIC ACIDS (5) - EPA 557
HALOACETIC ACIDS (5) - SM 6251B
HALOACETIC ACIDS (5) - SM 6610B
THM (group) - EPA 502.2
THM (group) - EPA 524.2
THM (group) - EPA 524.3
THM (group) - EPA 551.1
Bromate - ASTM D 6581
Bromate - EPA 300.1
Bromate - EPA 302.0
Bromate - EPA 317.0 Rev. 2.0
Bromate - EPA 321.8
Bromate - EPA 326.0
Bromate - EPA 557
Bromide - ASTM D 6581
Bromide - EPA 300.0
Bromide - EPA 300.1
Bromide - EPA 326.0
Bromide - EPA 327.0 Rev. 1.1
Bromodichloromethane - EPA 502.2
Bromodichloromethane - EPA 524.2
Bromodichloromethane - EPA 524.3
Bromodichloromethane - EPA 551.1
Bromoform - EPA 502.2
Bromoform - EPA 524.2
Bromoform - EPA 524.3
Bromoform - EPA 551.1
Chlorate - EPA 300.1
Chlorine Dioxide - EPA 327.0, Rev.1
Chlorine Dioxide - SM4500-ClO2 C
Chlorine Dioxide - SM4500-ClO2 D
Chlorine Dioxide - SM4500-ClO2 E
Chlorite - ASTM D 6581
Chlorite - EPA 300.0
Chlorite - EPA 300.1
Chlorite - EPA 317.0 Rev. 2.0
Chlorite - EPA 326.0
Chlorite - EPA 327.0 Rev. 1.1
Chlorite - SM 4500-ClO2 E
Chloroform - EPA 502.2

	Chloroform - EPA 524.2
	Chloroform - EPA 524.3
	Chloroform - EPA 551.1
	Dibromochloromethane - EPA 502.2
	Dibromochloromethane - EPA 524.2
	Dibromochloromethane - EPA 524.3
	Dibromochloromethane - EPA 551.1
	Ozone - SM 4500-O3 B
Class: Primary inorganics contaminants; non-metals	
	Cyanide - ALPKEM OIA-77
	Cyanide - ASTM D2036 (A)
	Cyanide - ASTM D2036 (B)
	Cyanide - ASTM D6888
	Cyanide - EPA 335.4
	Cyanide - Kelada Kelada 01
	Cyanide - ME355.01
	Cyanide - QuikChem10-204-00-1-X
	Cyanide - SM 4500-CN- C,E
	Cyanide - SM 4500-CN- C,F
	Cyanide - USGS I-3300-85
	Cyanide, Amenable - SM 4500-CN- C,G
	Fluoride - ASTM D1179 (B)
	Fluoride - ASTM D4327
	Fluoride - ASTM D6508, Rev 2
	Fluoride - EPA 300.0
	Fluoride - EPA 300.1
	Fluoride - HACH Method 10225
	Fluoride - SM 4110B
	Fluoride - SM 4500F- B, D
	Fluoride - SM 4500F- C
	Fluoride - SM 4500F- E
	Fluoride - Technicon 129-71W
	Fluoride - Technicon 380-75WE
	Nitrate - ASTM D3867 (A)
	Nitrate - ASTM D3867 (B)
	Nitrate - ASTM D4327
	Nitrate - ASTM D6508, Rev 2
	Nitrate - EPA 300.0
	Nitrate - EPA 300.1
	Nitrate - EPA 353.2
	Nitrate - Hach Method 10206
	Nitrate - Orion 601
	Nitrate - SM 4110B
	Nitrate - SM 4500-NO3- D
	Nitrate - SM 4500-NO3- E
	Nitrate - SM 4500-NO3- F
	Nitrate - Systea Easy

	Nitrate - Waters B-1011
	Nitrate + Nitrite - ASTM D3867 (A)
	Nitrate + Nitrite - ASTM D3867 (B)
	Nitrate + Nitrite - ASTM D4327
	Nitrate + Nitrite - ASTM D6508, Rev 2
	Nitrate + Nitrite - EPA 300.0
	Nitrate + Nitrite - EPA 300.1
	Nitrate + Nitrite - EPA 353.2
	Nitrate + Nitrite - SM 4110B
	Nitrate + Nitrite - SM 4500-NO3- E
	Nitrate + Nitrite - SM 4500-NO3- F
	Nitrate + Nitrite - Waters B-1011
	Nitrite - ASTM D3867 (A)
	Nitrite - ASTM D3867 (B)
	Nitrite - ASTM D4327
	Nitrite - ASTM D6508, Rev 2
	Nitrite - EPA 300.0
	Nitrite - EPA 300.1
	Nitrite - EPA 353.2
	Nitrite - SM 4110B
	Nitrite - SM 4500-NO2- B
	Nitrite - SM 4500-NO3- E
	Nitrite - SM 4500-NO3- F
	Nitrite - Systea Easy
	Nitrite - Waters B-1011
Class: Primary inorganics contaminants; metals	
	Antimony - ASTM D3697
	Antimony - EPA 200.5 Axial ICP
	Antimony - EPA 200.8
	Antimony - EPA 200.9
	Antimony - SM 3113B
	Arsenic - ASTM D2972 (B)
	Arsenic - ASTM D2972 (C)
	Arsenic - EPA 200.5 Axial ICP
	Arsenic - EPA 200.8
	Arsenic - EPA 200.9
	Arsenic - SM 3113B
	Arsenic - SM 3114B
	Barium - EPA 200.5 Axial ICP
	Barium - EPA 200.7
	Barium - EPA 200.8
	Barium - SM 3111D
	Barium - SM 3113B
	Barium - SM 3120B
	Beryllium - ASTM D3645 (B)
	Beryllium - EPA 200.5 Axial ICP
	Beryllium - EPA 200.7

		Beryllium - EPA 200.8
		Beryllium - EPA 200.9
		Beryllium - SM 3113B
		Beryllium - SM 3120B
		Cadmium - EPA 200.5 Axial ICP
		Cadmium - EPA 200.7
		Cadmium - EPA 200.8
		Cadmium - EPA 200.9
		Cadmium - SM 3113B
		Chromium - EPA 200.5 Axial ICP
		Chromium - EPA 200.7
		Chromium - EPA 200.8
		Chromium - EPA 200.9
		Chromium - SM 3113B
		Chromium - SM 3120B
		Copper - ASTM D1688 (A)
		Copper - ASTM D1688 (C)
		Copper - EPA 200.5 Axial ICP
		Copper - EPA 200.7
		Copper - EPA 200.8
		Copper - EPA 200.9
		Copper - SM 3111B
		Copper - SM 3113B
		Copper - SM 3120B
		Lead - ASTM D3559 (D)
		Lead - EPA 200.5 Axial ICP
		Lead - EPA 200.8
		Lead - EPA 200.9
		Lead - Palintest 1001
		Lead - SM 3113B
		Mercury - ASTM D3223
		Mercury - EPA 200.8
		Mercury - EPA 245.1
		Mercury - EPA 245.2
		Mercury - SM 3112B
		Nickel - EPA 200.5 Axial ICP
		Nickel - EPA 200.7
		Nickel - EPA 200.8
		Nickel - EPA 200.9
		Nickel - SM 3111B
		Nickel - SM 3113B
		Nickel - SM 3120B
		Selenium - ASTM D3859 (A)
		Selenium - ASTM D3859 (B)
		Selenium - EPA 200.5 Axial ICP
		Selenium - EPA 200.8

	Selenium - EPA 200.9
	Selenium - SM 3113B
	Selenium - SM 3114B
	Thallium - EPA 200.8
	Thallium - EPA 200.9
Class: Secondary inorganics contaminants; non-metals	
	Alkalinity - ASTM D1067 (B)
	Alkalinity - SM 2320B
	Alkalinity - USGS I-1030-85
	Chloride - ASTM D4327
	Chloride - ASTM D512 (B)
	Chloride - ASTM D6508, Rev. 2
	Chloride - EPA 300.0
	Chloride - EPA 300.1
	Chloride - SM 4110B
	Chloride - SM 4500-Cl- B
	Chloride - SM 4500-Cl- D
	Chlorine, Combined - ASTM D1253
	Chlorine, Combined - SM 4500-Cl D
	Chlorine, Combined - SM 4500-Cl F
	Chlorine, Combined - SM 4500-Cl G
	Chlorine, Free - ASTM D1253
	Chlorine, Free - Chlorosense
	Chlorine, Free - EPA 334.0
	Chlorine, Free - SM 4500-Cl D
	Chlorine, Free - SM 4500-Cl F
	Chlorine, Free - SM 4500-Cl G
	Chlorine, Free - SM 4500-Cl H
	Chlorine, Total - ASTM D1253
	Chlorine, Total - Chlorosense
	Chlorine, Total - EPA 334.0
	Chlorine, Total - SM 4500-Cl D
	Chlorine, Total - SM 4500-Cl E
	Chlorine, Total - SM 4500-Cl F
	Chlorine, Total - SM 4500-Cl G
	Chlorine, Total - SM 4500-Cl I
	Conductivity - ASTM D1125 (A)
	Conductivity - SM 2510 B
	Diss. Org. Carbon (DOC) - EPA 415.3
	Diss. Org. Carbon (DOC) - SM5310 B
	Diss. Org. Carbon (DOC) - SM5310 C
	Diss. Org. Carbon (DOC) - SM5310 D
	Foaming agents (MBAS) - SM 5540C
	Orthophosphate - ASTM D4327
	Orthophosphate - ASTM D515 (A)
	Orthophosphate - ASTM D6508, Rev. 2

	Orthophosphate - EPA 300.0
	Orthophosphate - EPA 300.1
	Orthophosphate - EPA 365.1
	Orthophosphate - SM 4110B
	Orthophosphate - SM 4500-P E
	Orthophosphate - SM 4500-P F
	Orthophosphate - USGS I-1601-85
	Orthophosphate - USGS I-2598-85
	Orthophosphate - USGS I-2601-90
	pH - ASTM D1293
	pH - EPA 150.1
	pH - EPA 150.2
	pH - SM 4500-H+ B
	Sulfate - ASTM D4327
	Sulfate - ASTM D516
	Sulfate - ASTM D6508, Rev. 2
	Sulfate - EPA 300.0
	Sulfate - EPA 300.1
	Sulfate - EPA 375.2
	Sulfate - SM 4110B
	Sulfate - SM 4500-SO42- C, D
	Sulfate - SM 4500-SO42- E
	Sulfate - SM 4500-SO42- F
	SUVA (calc.) - EPA 415.3
	TDS (Total Dissolved Solids) - SM 2540C
	Total Organic Carbon (TOC) - EPA 415.3
	Total Organic Carbon (TOC) - SM5310 B
	Total Organic Carbon (TOC) - SM5310 C
	Total Organic Carbon (TOC) - SM5310 D
	Turbidity - AMI Turbiwell
	Turbidity - EPA 180.1
	Turbidity - GLI Method 2
	Turbidity - HACH FilterTrak 10133
	Turbidity - Mitchell M5271
	Turbidity - Mitchell M5331
	Turbidity - Orion AQ4500
	Turbidity - SM 2130B
	UV254 - EPA 415.3
	UV254 - SM5910 B
Class: Secondary inorganics contaminants; metals	
	Aluminum - EPA 200.5 Axial ICP
	Aluminum - EPA 200.7
	Aluminum - EPA 200.8
	Aluminum - EPA 200.9
	Aluminum - SM 3111D
	Aluminum - SM 3113B

		Aluminum - SM 3120B
		Calcium - ASTM D511 (A)
		Calcium - ASTM D511 (B)
		Calcium - ASTM D6919
		Calcium - EPA 200.5 Axial ICP
		Calcium - EPA 200.7
		Calcium - SM 3111B
		Calcium - SM 3120B
		Calcium - SM 3500-Ca B
		Calcium - SM 3500-Ca D
		Iron - EPA 200.5 Axial ICP
		Iron - EPA 200.7
		Iron - EPA 200.9
		Iron - SM 3111B
		Iron - SM 3113B
		Iron - SM 3120B
		Magnesium - ASTM D511 (A)
		Magnesium - ASTM D511 (B)
		Magnesium - ASTM D6919
		Magnesium - EPA 200.5 Axial ICP
		Magnesium - EPA 200.7
		Magnesium - SM 3111 B
		Magnesium - SM 3120 B
		Magnesium - SM 3500-Mg B
		Manganese - EPA 200.5 Axial ICP
		Manganese - EPA 200.7
		Manganese - EPA 200.8
		Manganese - EPA 200.9
		Manganese - SM 3111B
		Manganese - SM 3113B
		Manganese - SM 3120B
		Silica - ASTM D859
		Silica - EPA 200.5 Axial ICP
		Silica - EPA 200.7
		Silica - SM 3120B
		Silica - SM 4500-Si D
		Silica - SM 4500-Si E
		Silica - SM 4500-Si F
		Silica - SM 4500-SiO2 C
		Silica - SM 4500-SiO2 D
		Silica - SM 4500-SiO2 E
		Silica - USGS I-1700-85
		Silica - USGS I-2700-85
		Silver - EPA 200.5 Axial ICP
		Silver - EPA 200.7
		Silver - EPA 200.8

	Silver - EPA 200.9
	Silver - SM 3111B
	Silver - SM 3113B
	Silver - SM 3120B
	Silver - USGS I-3720-85
	Sodium - ASTM D6919
	Sodium - EPA 200.5 Axial ICP
	Sodium - EPA 200.7
	Sodium - SM 3111B
	Zinc - EPA 200.5 Axial ICP
	Zinc - EPA 200.7
	Zinc - EPA 200.8
	Zinc - SM 3111B
	Zinc - SM 3120B
Class: Synthetic organic contaminants (SOC) - Dioxin	
	2,3,7,8-TCDD (Dioxin) - EPA 1613
Class: Synthetic organic contaminants (SOC) – Organochlorine pesticides	
	Aldrin - EPA 505
	Aldrin - EPA 508
	Aldrin - EPA 508.1
	Aldrin - EPA 525.2
	Chlordane - EPA 505
	Chlordane - EPA 508
	Chlordane - EPA 508.1
	Chlordane - EPA 525.2
	Chlordane - EPA 525.3
	Dieldrin - EPA 505
	Dieldrin - EPA 508
	Dieldrin - EPA 508.1
	Dieldrin - EPA 525.2
	Endrin - EPA 505
	Endrin - EPA 508
	Endrin - EPA 508.1
	Endrin - EPA 525.2
	Endrin - EPA 525.3
	Endrin - EPA 551.1
	Heptachlor - EPA 505
	Heptachlor - EPA 508
	Heptachlor - EPA 508.1
	Heptachlor - EPA 525.2
	Heptachlor - EPA 525.3
	Heptachlor - EPA 551.1
	Heptachlor epoxide - EPA 505
	Heptachlor epoxide - EPA 508
	Heptachlor epoxide - EPA 508.1
	Heptachlor epoxide - EPA 525.2

	Heptachlor epoxide - EPA 525.3
	Heptachlor epoxide - EPA 551.1
	Lindane (gamma-BHC) - EPA 505
	Lindane (gamma-BHC) - EPA 508
	Lindane (gamma-BHC) - EPA 508.1
	Lindane (gamma-BHC) - EPA 525.2
	Lindane (gamma-BHC) - EPA 525.3
	Lindane (gamma-BHC) - EPA 551.1
	Methoxychlor - EPA 505
	Methoxychlor - EPA 508
	Methoxychlor - EPA 508.1
	Methoxychlor - EPA 525.2
	Methoxychlor - EPA 525.3
	Methoxychlor - EPA 551.1
	Toxaphene - EPA 505
	Toxaphene - EPA 508
	Toxaphene - EPA 508.1
	Toxaphene - EPA 525.2
	Toxaphene - EPA 525.3
Class: Synthetic organic contaminants (SOC) – Nitrogen-phosphorus pesticides	
	Alachlor - EPA 505
	Alachlor - EPA 507
	Alachlor - EPA 508.1
	Alachlor - EPA 525.2
	Alachlor - EPA 525.3
	Alachlor - EPA 551.1
	Atrazine - EPA 505
	Atrazine - EPA 507
	Atrazine - EPA 508.1
	Atrazine - EPA 523
	Atrazine - EPA 525.2
	Atrazine - EPA 525.3
	Atrazine - EPA 536
	Atrazine - EPA 551.1
	Atrazine - Syngenta AG-625
	Butachlor - EPA 507
	Butachlor - EPA 508.1
	Butachlor - EPA 525.2
	Metolachlor - EPA 507
	Metolachlor - EPA 508.1
	Metolachlor - EPA 525.2
	Metolachlor - EPA 551.1
	Metribuzin - EPA 507
	Metribuzin - EPA 508.1
	Metribuzin - EPA 525.2
	Metribuzin - EPA 551.1

	Propachlor - EPA 507
	Propachlor - EPA 508.1
	Propachlor - EPA 525.2
	Simazine - EPA 505
	Simazine - EPA 507
	Simazine - EPA 508.1
	Simazine - EPA 523
	Simazine - EPA 525.2
	Simazine - EPA 525.3
	Simazine - EPA 536
	Simazine - EPA 551.1
Class: Synthetic organic contaminants (SOC) – Herbicides	
	2,4-D - ASTM D5317
	2,4-D - EPA 515.1
	2,4-D - EPA 515.2
	2,4-D - EPA 515.3
	2,4-D - EPA 515.4
	2,4-D - EPA 555
	2,4-D - SM 6640 B
	Dalapon - EPA 515.1
	Dalapon - EPA 515.3
	Dalapon - EPA 515.4
	Dalapon - EPA 552.1
	Dalapon - EPA 552.2
	Dalapon - EPA 552.3
	Dalapon - EPA 557
	Dalapon - SM 6640 B
	Dicamba - EPA 515.1
	Dicamba - EPA 515.2
	Dicamba - EPA 515.3
	Dicamba - EPA 515.4
	Dicamba - EPA 555
	Dinoseb - EPA 515.1
	Dinoseb - EPA 515.2
	Dinoseb - EPA 515.3
	Dinoseb - EPA 515.4
	Dinoseb - EPA 555
	Dinoseb - SM 6640 B
	Pentachlorophenol - ASTM D5317
	Pentachlorophenol - EPA 515.1
	Pentachlorophenol - EPA 515.2
	Pentachlorophenol - EPA 515.3
	Pentachlorophenol - EPA 515.4
	Pentachlorophenol - EPA 525.2
	Pentachlorophenol - EPA 525.3
	Pentachlorophenol - EPA 555

	Pentachlorophenol - SM 6640B
	Picloram - ASTM D5317
	Picloram - EPA 515.1
	Picloram - EPA 515.2
	Picloram - EPA 515.3
	Picloram - EPA 515.4
	Picloram - EPA 555
	Picloram - SM 6640 B
	Silvex (2.4.5-TP) - ASTM D5317
	Silvex (2.4.5-TP) - EPA 515.1
	Silvex (2.4.5-TP) - EPA 515.2
	Silvex (2.4.5-TP) - EPA 515.3
	Silvex (2.4.5-TP) - EPA 515.4
	Silvex (2.4.5-TP) - EPA 555
	Silvex (2.4.5-TP) - SM 6640 B
Class: Synthetic organic contaminants (SOC) – Miscellaneous	
	3-Hydroxycarbofuran - EPA 531.1
	3-Hydroxycarbofuran - EPA 531.2
	3-Hydroxycarbofuran - SM6610
	Aldicarb - EPA 531.1
	Aldicarb - EPA 531.2
	Aldicarb - SM6610
	Aldicarb Sulfone - EPA 531.1
	Aldicarb Sulfone - EPA 531.2
	Aldicarb Sulfone - SM6610
	Aldicarb Sulfoxide - EPA 531.1
	Aldicarb Sulfoxide - EPA 531.2
	Aldicarb Sulfoxide - SM6610
	Benzo[a]pyrene - EPA 525.2
	Benzo[a]pyrene - EPA 525.3
	Benzo[a]pyrene - EPA 550
	Benzo[a]pyrene - EPA 550.1
	Carbaryl - EPA 531.1
	Carbaryl - EPA 531.2
	Carbaryl - SM6610
	Carbofuran - EPA 531.1
	Carbofuran - EPA 531.2
	Carbofuran - SM 6610B
	Carbofuran - SM 6651B
	Di(2-ethylhexyl)adipate - EPA 506
	Di(2-ethylhexyl)adipate - EPA 525.2
	Di(2-ethylhexyl)adipate - EPA 525.3
	Di(2-ethylhexyl)phthalate - EPA 506
	Di(2-ethylhexyl)phthalate - EPA 525.2
	Di(2-ethylhexyl)phthalate - EPA 525.3
	Dibromochloropropane (DBCP) - EPA 504.1

	Dibromochloropropane (DBCP) - EPA 524.3
	Dibromochloropropane (DBCP) - EPA 551.1
	Diquat - EPA 549.2
	Endothall - EPA 548.1
	Ethylene Dibromide (EDB) - EPA 504.1
	Ethylene Dibromide (EDB) - EPA 524.3
	Ethylene Dibromide (EDB) - EPA 551.1
	Glyphosate - EPA 547
	Glyphosate - SM 6651B
	Hexachlorobenzene - EPA 505
	Hexachlorobenzene - EPA 508
	Hexachlorobenzene - EPA 508.1
	Hexachlorobenzene - EPA 525.2
	Hexachlorobenzene - EPA 525.3
	Hexachlorobenzene - EPA 551.1
	Hexachlorocyclopentadiene - EPA 505
	Hexachlorocyclopentadiene - EPA 508
	Hexachlorocyclopentadiene - EPA 508.1
	Hexachlorocyclopentadiene - EPA 525.2
	Hexachlorocyclopentadiene - EPA 525.3
	Hexachlorocyclopentadiene - EPA 551.1
	Methomyl - EPA 531.1
	Methomyl - EPA 531.2
	Methomyl - SM6610
	Oxamyl (Vydate) - EPA 531.1
	Oxamyl (Vydate) - EPA 531.2
	Oxamyl (Vydate) - SM 6610B
	Oxamyl (Vydate) - SM 6651B
	PCBs (as Aroclors) Screening - EPA 505
	PCBs (as Aroclors) Screening - EPA 508
	PCBs (as Aroclors) Screening - EPA 508.1
	PCBs (as Aroclors) Screening - EPA 525.2
	PCBs (as Aroclors) Screening - EPA 525.3
	PCBs (as Decachlorobiphenyl) - EPA 508A
Class: Volatile organic compounds	
	## VOCS, REGULATED (group) - EPA 502.2
	## VOCS, REGULATED (group) - EPA 524.2
	## VOCS, REGULATED (group) - EPA 524.3
	## VOCS, UNREGULATED (group) - EPA 502.2
	## VOCS, UNREGULATED (group) - EPA 524.2
	## VOCS, UNREGULATED (group) - EPA 524.3
	Regulated VOCs
	® 1,1,1-Trichloroethane - EPA 502.2
	® 1,1,1-Trichloroethane - EPA 524.2
	® 1,1,1-Trichloroethane - EPA 524.3
	® 1,1,1-Trichloroethane - EPA 551.1

	® 1,1,2-Trichloroethane - EPA 502.2
	® 1,1,2-Trichloroethane - EPA 524.2
	® 1,1,2-Trichloroethane - EPA 524.3
	® 1,1,2-Trichloroethane - EPA 551.1
	® 1,1-Dichloroethylene - EPA 502.2
	® 1,1-Dichloroethylene - EPA 524.2
	® 1,1-Dichloroethylene - EPA 524.3
	® 1,2,4-Trichlorobenzene - EPA 502.2
	® 1,2,4-Trichlorobenzene - EPA 524.2
	® 1,2,4-Trichlorobenzene - EPA 524.3
	® 1,2-Dichlorobenzene - EPA 502.2
	® 1,2-Dichlorobenzene - EPA 524.2
	® 1,2-Dichlorobenzene - EPA 524.3
	® 1,2-Dichloroethane - EPA 502.2
	® 1,2-Dichloroethane - EPA 524.2
	® 1,2-Dichloroethane - EPA 524.3
	® 1,2-Dichloroethylene (cis-) - EPA 502.2
	® 1,2-Dichloroethylene (cis-) - EPA 524.2
	® 1,2-Dichloroethylene (cis-) - EPA 524.3
	® 1,2-Dichloroethylene (trans-) - EPA 502.2
	® 1,2-Dichloroethylene (trans-) - EPA 524.2
	® 1,2-Dichloroethylene (trans-) - EPA 524.3
	® 1,2-Dichloropropane - EPA 502.2
	® 1,2-Dichloropropane - EPA 524.2
	® 1,2-Dichloropropane - EPA 524.3
	® 1,4-Dichlorobenzene - EPA 502.2
	® 1,4-Dichlorobenzene - EPA 524.2
	® 1,4-Dichlorobenzene - EPA 524.3
	® Benzene - EPA 502.2
	® Benzene - EPA 524.2
	® Benzene - EPA 524.3
	® Carbon Tetrachloride - EPA 502.2
	® Carbon Tetrachloride - EPA 524.2
	® Carbon Tetrachloride - EPA 524.3
	® Carbon Tetrachloride - EPA 551.1
	® Chlorobenzene - EPA 502.2
	® Chlorobenzene - EPA 524.2
	® Chlorobenzene - EPA 524.3
	® Dichloromethane - EPA 502.2
	® Dichloromethane - EPA 524.2
	® Dichloromethane - EPA 524.3
	® Ethylbenzene - EPA 502.2
	® Ethylbenzene - EPA 524.2
	® Ethylbenzene - EPA 524.3
	® Styrene - EPA 502.2
	® Styrene - EPA 524.2

	® Styrene - EPA 524.3
	® Tetrachloroethylene - EPA 502.2
	® Tetrachloroethylene - EPA 524.2
	® Tetrachloroethylene - EPA 524.3
	® Tetrachloroethylene - EPA 551.1
	® Toluene - EPA 502.2
	® Toluene - EPA 524.2
	® Toluene - EPA 524.3
	® Trichloroethylene - EPA 502.2
	® Trichloroethylene - EPA 524.2
	® Trichloroethylene - EPA 524.3
	® Trichloroethylene - EPA 551.1
	® Vinyl Chloride - EPA 502.2
	® Vinyl Chloride - EPA 524.2
	® Vinyl Chloride - EPA 524.3
	® Xylenes (Total) - EPA 502.2
	® Xylenes (Total) - EPA 524.2
	® Xylenes (Total) - EPA 524.3
	Un-regulated VOCs
	1,1,1,2,-Tetrachloroethane - EPA 502.2
	1,1,1,2,-Tetrachloroethane - EPA 524.2
	1,1,1,2,-Tetrachloroethane - EPA 524.3
	1,1,2,2-Tetrachloroethane - EPA 502.2
	1,1,2,2-Tetrachloroethane - EPA 524.2
	1,1,2,2-Tetrachloroethane - EPA 524.3
	1,1-Dichloroethane - EPA 502.2
	1,1-Dichloroethane - EPA 524.2
	1,1-Dichloroethane - EPA 524.3
	1,1-Dichloropropene - EPA 502.2
	1,1-Dichloropropene - EPA 524.2
	1,1-Dichloropropene - EPA 524.3
	1,2,3-Trichlorobenzene - EPA 502.2
	1,2,3-Trichlorobenzene - EPA 524.2
	1,2,3-Trichlorobenzene - EPA 524.3
	1,2,3-Trichloropropane - EPA 502.2
	1,2,3-Trichloropropane - EPA 524.2
	1,2,3-Trichloropropane - EPA 524.3
	1,2,4-Trimethylbenzene - EPA 502.2
	1,2,4-Trimethylbenzene - EPA 524.2
	1,2,4-Trimethylbenzene - EPA 524.3
	1,3,5-Trimethylbenzene - EPA 502.2
	1,3,5-Trimethylbenzene - EPA 524.2
	1,3,5-Trimethylbenzene - EPA 524.3
	1,3-Dichlorobenzene - EPA 502.2
	1,3-Dichlorobenzene - EPA 524.2
	1,3-Dichlorobenzene - EPA 524.3

	1,3-Dichloropropane - EPA 502.2
	1,3-Dichloropropane - EPA 524.2
	1,3-Dichloropropane - EPA 524.3
	1,3-Dichloropropylene (cis) - EPA 502.2
	1,3-Dichloropropylene (cis) - EPA 524.2
	1,3-Dichloropropylene (cis) - EPA 524.3
	1,3-Dichloropropylene (trans) - EPA 502.2
	1,3-Dichloropropylene (trans) - EPA 524.2
	1,3-Dichloropropylene (trans) - EPA 524.3
	2,2-Dichloropropane - EPA 502.2
	2,2-Dichloropropane - EPA 524.2
	2,2-Dichloropropane - EPA 524.3
	2-Chlorotoluene - EPA 502.2
	2-Chlorotoluene - EPA 524.2
	2-Chlorotoluene - EPA 524.3
	4-Chlorotoluene - EPA 502.2
	4-Chlorotoluene - EPA 524.2
	4-Chlorotoluene - EPA 524.3
	4-Isopropyltoluene - EPA 502.2
	4-Isopropyltoluene - EPA 524.2
	4-Isopropyltoluene - EPA 524.3
	Bromobenzene - EPA 502.2
	Bromobenzene - EPA 524.2
	Bromobenzene - EPA 524.3
	Bromochloromethane - EPA 502.2
	Bromochloromethane - EPA 524.2
	Bromochloromethane - EPA 524.3
	Bromomethane - EPA 502.2
	Bromomethane - EPA 524.2
	Bromomethane - EPA 524.3
	Chloroethane - EPA 502.2
	Chloroethane - EPA 524.2
	Chloroethane - EPA 524.3
	Chloromethane - EPA 502.2
	Chloromethane - EPA 524.2
	Chloromethane - EPA 524.3
	Dibromomethane - EPA 502.2
	Dibromomethane - EPA 524.2
	Dibromomethane - EPA 524.3
	Dichlorodifluoromethane - EPA 502.2
	Dichlorodifluoromethane - EPA 524.2
	Dichlorodifluoromethane - EPA 524.3
	Fluorotrichloromethane - EPA 502.2
	Fluorotrichloromethane - EPA 524.2
	Fluorotrichloromethane - EPA 524.3
	Hexachlorobutadiene - EPA 502.2

	Hexachlorobutadiene - EPA 524.2
	Hexachlorobutadiene - EPA 524.3
	Isopropylbenzene - EPA 502.2
	Isopropylbenzene - EPA 524.2
	Isopropylbenzene - EPA 524.3
	Methyl tert-Butyl Ether - EPA 502.2
	Methyl tert-Butyl Ether - EPA 524.2
	Methyl tert-Butyl Ether - EPA 524.3
	Naphthalene - EPA 502.2
	Naphthalene - EPA 524.2
	Naphthalene - EPA 524.3
	n-Butylbenzene - EPA 502.2
	n-Butylbenzene - EPA 524.2
	n-Butylbenzene - EPA 524.3
	n-Propylbenzene - EPA 502.2
	n-Propylbenzene - EPA 524.2
	n-Propylbenzene - EPA 524.3
	sec-Butylbenzene - EPA 502.2
	sec-Butylbenzene - EPA 524.2
	sec-Butylbenzene - EPA 524.3
	tert-Butylbenzene - EPA 502.2
	tert-Butylbenzene - EPA 524.2
	tert-Butylbenzene - EPA 524.3

NR 149 Appendix I Table 2: Analytes and analyte groups available for accreditation

Analyte Groups

Analyte	Class code	Technologies		Class
		Aqueous matrix	Non-aqueous matrix	Drinking Water matrix
## DIOXINS & FURANS (group)	GRP	HRGC/MS	HRGC/MS	--
## HALOACETIC ACIDS (5)	GRP	--	--	EPA 552.1 EPA 552.2 EPA 552.3 EPA 557 SM 6251B SM 6251 B-94 SM 6610B
## PAH (group)	GRP	GC GC/MS LC	GC GC/MS LC	--
## PCB as AROCLORS (group)	GRP	GC GC/MS	GC GC/MS	--
## PCB CONGENERS (group)	GRP	GC GC/MS HRGC/MS	GC GC/MS HRGC/MS	--

## PESTICIDES, ORGANOCHLORINE (group)	GRP	GC GC/MS	GC GC/MS	--
## SEMIVOLATILES [BNA] (group)	GRP	GC GC/MS	GC GC/MS	--
## THM (group) - EPA 502.2	GRP	--	--	EPA 502.2 EPA 524.2 EPA 524.3 EPA 551.1
## VOLATILE ORGANICS [VOC] (group)	GRP	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
Analytes				
1,1,1,2-Tetrachloroethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,1,1-Trichloroethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3 EPA 551.1
1,1,2,2-Tetrachloroethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,1,2-Trichloroethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3 EPA 551.1
1,1-Dichloroethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,1-Dichloroethylene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,1-Dichloropropene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,2,3,4-Diepoxybutane	VOC	GC/MS	GC/MS	--
1,2,3-Trichlorobenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,2,3-Trichloropropane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,2,4,5-Tetrachlorobenzene	CHLH	GC GC/MS	GC GC/MS	--
1,2,4-Trichlorobenzene	CHLH VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,2,4-Trimethylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
1,2-Dibromo-3-chloropropane (DBCP),(Dibromochloropropane)	PEST SOCM VOC	GC	GC	EPA 504.1 EPA 524.3 EPA 551.1
1,2-Dibromoethane (EDB),	VOC	GC	GC	EPA 504.1

	Ethylene Dibromide		GC/MS	GC/MS	EPA 524.3 EPA 551.1
	1,2-Dichlorobenzene	CHLH VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,2-Dichloroethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,2-Dichloroethene (cis)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,2-Dichloroethene (trans)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,2-Dichloropropane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,2-Dinitrobenzene	NARO M	GC GC/MS	GC GC/MS	--
	1,3,5-Trimethylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,3,5-Trinitrobenzene	EXPLO NARO M	GC GC/MS LC	GC GC/MS LC	--
	1,3-Dichloro-2-propanol	VOC	GC GC/MS	GC GC/MS	--
	1,3-Dichlorobenzene	CHLH VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,3-Dichloropropane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,3-Dichloropropylene (cis)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,3-Dichloropropylene (trans)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,3-Dinitrobenzene	EXPLO NARO M	GC GC/MS LC	GC GC/MS LC	--
	1,3-Propanediol	VOC	GC GC/MS	GC GC/MS	--
	1,4-Dichloro-2-butene (trans)	VOC	GC/MS	GC/MS	--
	1,4-Dichlorobenzene	CHLC VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	1,4-Dinitrobenzene	NARO M	GC GC/MS	GC GC/MS	--
	1,4-Dioxane	BNAN H VOC	GC GC/MS	GC GC/MS	--
	1,4-Naphthoquinone	NARO M	GC GC/MS	GC GC/MS	--

1,4-Phenylenediamine	NAROM	GC GC/MS	GC GC/MS	--
1-Acetyl-2-thiourea	BNANH	GC/MS	GC/MS	--
1-Chlorohexane	VOC	GC/MS	GC/MS	--
1-Chloronaphthalene	CHLH	GC/MS	GC/MS	--
1-Methylnaphthalene	PAH	GC GC/MS LC	GC GC/MS LC	--
1-Naphthylamine	NAROM	GC GC/MS	GC GC/MS	--
1-Propanol	VOC	GC/MS	GC/MS	--
2,2-Dichloropropane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
2,3,4,6-Tetrachlorophenol	PHEN	GC GC/MS	GC GC/MS	--
2,3,5,6-Tetrachlorophenol	PHEN	GC GC/MS	GC GC/MS	--
2,3,7,8-TCDD (Dioxin)	SOCD	--	--	EPA 1613
2,3-Dichloropropene	VOC	GC GC/MS	GC GC/MS	--
2,3-Dinitrotoluene	EXPLO	GC/MS	--	--
2,4,5-T	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
2,4,5-T, butoxyethanol Ester	APEST	LC LC/MS	LC LC/MS	--
2,4,5-T, butyl ester	APEST	LC LC/MS	LC LC/MS	--
2,4,5-Trichlorophenol	PHEN	GC GC/MS	GC GC/MS	--
2,4,5-Trimethylaniline	NAROM	GC GC/MS	GC GC/MS	--
2,4,6-Trichlorophenol	PHEN	GC GC/MS	GC GC/MS	--
2,4,6-Trinitrobenzene	EXPLO	LC	LC	--
2,4,6-Trinitrotoluene	EXPLO	LC	LC	--
2,4-D	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	ASTM D5317 EPA 515.1 EPA 515.2 EPA 515.3 EPA 515.4 EPA 555 SM 6640 B
2,4-D, butoxyethanol ester	APEST	LC LC/MS	LC LC/MS	--
2,4-D, ethylhexyl ester	APEST	LC LC/MS	LC LC/MS	--
2,4-DB	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
2,4-DB Salts and Esters	APEST	GC	GC	--

		LC LC/MS	LC LC/MS	
2,4-Diamino-6-nitrotoluene	EXPLO	LC	LC	--
2,4-Diaminotoluene	NARO M	GC GC/MS	GC GC/MS	--
2,4-Dichlorophenol	PHEN	GC GC/MS	GC GC/MS	--
2,4-Dimethylphenol	PHEN	GC GC/MS	GC GC/MS	--
2,4-Dinitrophenol	PHEN	GC GC/MS	GC GC/MS	--
2,4-Dinitrotoluene	EXPLO NARO M	GC GC/MS LC	GC GC/MS LC	--
2,5-Dinitrotoluene	EXPLO	GC/MS	--	--
2,6-Dichlorophenol	PHEN	GC GC/MS	GC GC/MS	--
2,6-Dichlorosyringaldehyde	PHEN	GC GC/MS	GC GC/MS	--
2,6-Dinitrotoluene	EXPLO NARO M	GC GC/MS LC	GC GC/MS LC	--
2-Acetylaminofluorene	BNAN H	GC/MS	GC/MS	--
2-Amino-4,6-dinitrotoluene	EXPLO	LC	LC	--
2-Aminoanthraquinone	BNAN H	GC/MS	GC/MS	--
2-Chloroethanol	VOC	GC GC/MS	GC GC/MS	--
2-Chloronaphthalene	CHLH VOC	GC GC/MS	GC GC/MS	--
2-Chlorophenol	PHEN	GC GC/MS	GC GC/MS	--
2-Chlorosyringaldehyde	PHEN	GC GC/MS	GC GC/MS	--
2-Chlorotoluene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
2-Cyclohexyl-4,6-dinitro-phenol	PHEN	GC GC/MS	GC GC/MS	--
2-Hexanone	VOC	GC GC/MS	GC GC/MS	--
2-Hydroxypropionitrile	BNAN H	GC/MS	GC/MS	--
2-Methyl-3-nitroaniline	EXPLO	GC/MS	--	--
2-Methyl-4,6-dinitrophenol	PHEN	GC GC/MS	GC GC/MS	--
2-Methyl-5-nitroaniline	NARO M EXPLO	GC/MS	--	--
2-Methyl-6-nitroaniline	EXPLO	GC/MS	--	--
2-Methylnaphthalene	PAH	GC GC/MS LC	GC GC/MS LC	--
2-Methylphenol (o-Cresol)	PHEN	GC	GC	--

		GC/MS	GC/MS	
2-Naphthylamine	NAROM	GC/MS	GC/MS	--
2-Nitroaniline	NAROM	GC/MS	GC/MS	--
2-Nitrophenol	PHEN	GC GC/MS	GC GC/MS	--
2-Nitropropane	VOC	GC/MS	GC/MS	--
2-Nitrotoluene	EXPLO	GC/MS LC	LC	--
2-Pentanone	VOC	GC GC/MS	GC GC/MS	--
2-Picoline (2-Methylpyridine)	NAROM VOC	GC/MS	GC/MS	--
3-(Chloromethyl)pyridine Hydrochloride	CHLH	GC/MS	GC/MS	--
3,3'-Dichlorobenzidine	BENZ	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
3,3'-Dimethoxybenzidine	BENZ	GC GC/MS LC/MS	GC GC/MS LC/MS	--
3,3'-Dimethylbenzidine	BENZ	GC GC/MS LC/MS	GC GC/MS LC/MS	--
3,4,5-Trichlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
3,4,5-Trichloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
3,4,6-Trichlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
3,4,6-Trichloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
3,4-Dichlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
3,4-Dichloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
3,4-Dinitrotoluene	EXPLO	GC/MS	--	--
3,5-Dichlorobenzoic acid	APEST	GC LC LC/MS	GC LC LC/MS	--
3,5-Dinitrotoluene	EXPLO	GC/MS	--	--
3,6-Dichlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
3-Amino-9-ethylcarbazole	NAROM	GC/MS	GC/MS	--
3-Chloropropionitrile	VOC	GC/MS	GC/MS	--
3-Hydroxycarbofuran	CARB	LC LC/MS	LC LC/MS	EPA 531.1 EPA 531.2 SM 6610
3-Methylcholanthrene	PAH	GC/MS	GC/MS	--
3-Methylphenol (m-Cresol)	PHEN	GC GC/MS	GC GC/MS	--
3-Nitroaniline	NARO	GC/MS	GC/MS	--

	M			
3-Nitrotoluene	EXPLO	GC/MS LC	GC/MS LC	--
4,4'-DDD	CPEST	GC GC/MS	GC GC/MS	---
4,4'-DDE	CPEST	GC GC/MS	GC GC/MS	---
4,4'-DDT	CPEST	GC GC/MS	GC GC/MS	---
4,4'-Methylenebis (2-chloroaniline)	NARO M	GC/MS	GC/MS	--
4,4'-Methylenebis(N,N-dimethylaniline)	NARO M	GC/MS	GC/MS	--
4,4'-Oxydianiline	NARO M	GC/MS	GC/MS	--
4,5,6-Trichloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
4,5-Dichlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
4,5-Dichloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
4,6-Dichlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
4,6-Dichloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
4-Amino-2,6-dinitrotoluene	EXPLO	LC	LC	--
4-Aminobiphenyl	NARO M	GC/MS	GC/MS	--
4-Bromophenyl phenyl ether	HALO	GC GC/MS	GC GC/MS	--
4-Chloro-1,2-phenylenediamine	NARO M	GC/MS	GC/MS	--
4-Chloro-1,3-phenylenediamine	NARO M	GC/MS	GC/MS	--
4-Chloro-3-methylphenol (4-Chloro-m-cresol)	PHEN	GC GC/MS	GC GC/MS	--
4-Chloroaniline	BNAN H NARO M	GC/MS	GC/MS	--
4-Chlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
4-Chloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
4-Chlorophenol	PHEN	GC GC/MS	GC GC/MS	--
4-Chlorophenyl phenyl ether	HALO	GC GC/MS	GC GC/MS	--
4-Chlorotoluene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
4-Dimethylaminoazobenzene	BNAN H	GC/MS	GC/MS	--
4-Methyl-2-nitroaniline	EXPLO	GC/MS	--	--
4-Methyl-2-pentanone (Methyl Isobutyl	VOC	GC	GC	--

	Ketone)		GC/MS	GC/MS	
	4-Methyl-3-nitroaniline	EXPLO	GC/MS	--	--
	4-Methylphenol (p-Cresol)	PHEN	GC GC/MS	GC GC/MS	--
	4-Nitroaniline	NARO M	GC/MS	GC/MS	--
	4-Nitrobiphenyl	NARO M	GC/MS	GC/MS	--
	4-Nitrophenol	APEST PHEN	GC GC/MS LC	GC GC/MS LC	--
	4-Nitroquinoline 1-oxide	BNAN H	GC/MS	GC/MS	--
	4-Nitrotoluene	EXPLO	GC/MS LC	LC	--
	5,5-Diphenylhydantoin	BNAN H	GC/MS	GC/MS	--
	5,6-Dichlorovanillin	PHEN	GC GC/MS	GC GC/MS	--
	5-Chloro-2-methylaniline	NARO M	GC/MS	GC/MS	--
	5-Chlorovanillin	PHEN	GC GC/MS	GC GC/MS	--
	5-Hydroxydicamba	APEST	GC	GC	--
	5-Methyl-2-nitroaniline	EXPLO	GC/MS	--	--
	5-Nitroacenaphthene	NARO M	GC/MS	GC/MS	--
	5-Nitro-o-anisidine	NARO M	GC/MS	GC/MS	--
	5-Nitro-o-toluidine	NARO M	GC/MS	--	--
	6-Chlorovanillin	PHEN	GC GC/MS	GC GC/MS	--
	7,12-Dimethylbenz(a)-anthracene	PAH	GC/MS	GC/MS	--
	a,a-Dimethylphenethylamine	NARO M	GC/MS	GC/MS	--
	Acenaphthene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Acenaphthylene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Acephate	OPEST	GC GC/MS	GC GC/MS	--
	Acetaldehyde	ALDKE	LC	LC	--
	Acetochlor	NPEST	GC GC/MS	GC GC/MS	--
	Acetone	ALDKE VOC	GC GC/MS LC	GC GC/MS LC	--
	Acetonitrile	VOC	GC GC/MS	GC GC/MS	--
	Acetophenone	BNAN H	GC/MS	GC/MS	--
	Acidity as CaCO3	GC	Titration	--	--

	Acifluorfen	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Acrolein	BNANH VOC	GC GC/MS	GC GC/MS	--
	Acrylamide	BNANH	GC/MS	GC/MS	--
	Acrylonitrile	BNANH VOC	GC GC/MS	GC GC/MS	--
	Alachlor	NPEST SOCN	GC GC/MS	GC GC/MS	EPA 505 EPA 507 EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Alachlor-ESA (Alachlor ethane sulfonic acid)	NPEST	LC/MS	LC/MS	--
	Aldicarb	CARB	LC LC/MS	LC LC/MS	EPA 531.1 EPA 531.2 SM 6610
	Aldicarb Sulfone	CARB	LC LC/MS	LC LC/MS	EPA 531.1 EPA 531.2 SM 6610
	Aldicarb Sulfoxide	CARB	LC LC/MS	LC LC/MS	EPA 531.1 EPA 531.2 SM 6610
	Aldrin	CPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2
	Alkalinity	GC SCNM	Colorimetry Titration	--	ASTM D1067 (B) SM 2320B SM online 2320B-97 USGS I-1030-85
	Allyl Alcohol	VOC	GC GC/MS	GC GC/MS	--
	Allyl Chloride	VOC	GC GC/MS	GC GC/MS	--
	alpha-BHC	CPEST	GC GC/MS	GC GC/MS	---
	Aluminum	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3111D SM 3111D-99 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99
	Ametryn	TPEST	GC	GC	--

			GC/MS	GC/MS	
	Aminoazobenzene	BNANH	GC/MS	GC/MS	--
	Aminocarb	CARB	LC/MS	LC/MS	--
	Ammonia as N	GC	Colorimetry ISE Titration	Colorimetry ISE Titration	--
	Anilazine	TPEST	GC GC/MS	GC GC/MS	--
	Aniline	BNANH	GC/MS	GC/MS	--
	Anthracene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Antimony	M	FLAA GFAA HydrideAA ICP ICP-MS	FLAA GFAA HydrideAA ICP ICP-MS	ASTM D3697 EPA 200.5 Axial EPA 200.8 EPA 200.9 SM 3113B SM 3113B-99
	Aramite	BNANH	GC/MS	GC/MS	--
	Arsenic	M	Colorimetry FLAA GFAA HydrideAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	ASTM D2972 (B) ASTM D2972 (C) EPA 200.5 Axial EPA 200.8 EPA 200.9 SM 3113B SM 3113B-99 SM 3114B SM 3114B-97
	Aspon	NPEST	GC GC/MS	LC/MS GC/MS	--
	Asulam	CARB	LC/MS	LC/MS	--
	Atraton	TPEST	GC GC/MS	GC GC/MS	--
	Atrazine	TPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 507 EPA 508.1 EPA 523 EPA 525.2 EPA 525.3 EPA 536 EPA 551.1 Syngenta AG-625
	Azinphos ethyl	OPEST	GC GC/MS	GC GC/MS	--
	Azinphos methyl (Guthion)	OPEST	GC GC/MS	GC GC/MS	--
	Azobenzene	BNANH	GC GC/MS	GC GC/MS	--
	Barban	CARB	GC GC/MS LC/MS	GC GC/MS LC/MS	--
	Barium	M	FLAA GFAA	FLAA GFAA	EPA 200.5 Axial EPA 200.7

			ICP ICP/MS	ICP ICP/MS	EPA 200.8 SM 3111D SM 3111D-99 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99
	Baygon (Propoxur)	CARB	LC LC/MS	LC LC/MS	--
	Bendiocarb	CARB	LC LC/MS	LC LC/MS	--
	Benfluralin	NPEST	GC GC/MS	GC GC/MS	--
	Benomyl	CARB	LC LC/MS	LC LC/MS	--
	Bentazon	NPEST	GC GC/MS LC	GC GC/MS LC	--
	Benzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Benzidine	BENZ	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Benzo[a]anthracene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Benzo[a]pyrene	PAH SOCM	GC GC/MS LC	GC GC/MS LC	EPA 525.2 EPA 525.3 EPA 550 EPA 550.1
	Benzo[b]fluoranthene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Benzo[g,h,i]perylene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Benzo[k]fluoranthene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Benzoic Acid	PHEN	GC/MS	GC/MS	--
	Benzoylprop Ethyl	NPEST	LC/MS	LC/MS	--
	Benzyl Alcohol	BNANH	GC/MS	GC/MS	--
	Benzyl chloride	CHLH	GC GC/MS	GC GC/MS	--
	Beryllium	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	ASTM D3645 (B) EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99

	beta-BHC (ß-BHC)	CPEST	GC GC/MS	GC GC/MS	---
	Biochemical Oxygen Demand (BOD)	GC	5-day Assay	--	--
	Biphenyl	BNANH	GC/MS	GC/MS	--
	Bis(2-chloroethoxy)methane	HALO	GC GC/MS	GC GC/MS	--
	Bis(2-chloroethyl) ether	HALO	GC GC/MS	GC GC/MS	--
	Bis(2-chloroethyl)sulfide	VOC	GC/MS	GC/MS	--
	Bis(2-chloroisopropyl) ether	HALO	GC GC/MS	GC GC/MS	--
	Bis(2-ethylhexyl)phthalate Di(2-ethylhexyl)phthalate	PHTHLSOCM	GC GC/MS	GC GC/MS	EPA 506 EPA 525.2 EPA 525.3
	Bismuth	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Bolstar	OPEST	GC GC/MS	GC GC/MS	--
	Boron	M	Colorimetry ICP ICP/MS	Colorimetry ICP ICP/MS	--
	Bromacil	NPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Bromate	DBP	--	--	ASTM D 6581 EPA 300.1 EPA 302.0 EPA 317.0 Rev. 2.0 EPA 321.8 EPA 326.0 EPA 557
	Bromide	GC DBP	IC Titration	IC Titration	ASTM D 6581 EPA 300.0 EPA 300.1 EPA 326.0 EPA 327.0 Rev. 1.1
	Bromoacetone	VOC	GC GC/MS	GC GC/MS	--
	Bromobenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Bromochloromethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Bromodichloromethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3 EPA 551.1
	Bromoform	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2

					EPA 524.3 EPA 551.1
	Bromomethane (Methyl bromide)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Bromoxynil (Brominal)	APEST NPEST	GC/MS LC	GC/MS LC	--
	Bromoxynil octanoate	NPEST	GC GC/MS	GC GC/MS	--
	Busan 40	CARB	GC GC/MS	GC GC/MS	--
	Busan 85	CARB	GC GC/MS	GC GC/MS	--
	Butachlor	NPEST SOCN	GC GC/MS	GC GC/MS	EPA 507 EPA 508.1 EPA 525.2
	Butanal	ALDKE	LC	LC	--
	Butyl benzyl phthalate	PHTHL	GC GC/MS	GC GC/MS	--
	Butylate	NPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Cadmium	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3113B SM 3113B-99
	Calcium	M	Colorimetry FLAA FPAA IC ICP ICP/MS	Colorimetry FLAA FPAA ICP ICP/MS	ASTM D511 (A) ASTM D511 (B) ASTM D6919 EPA 200.5 Axial EPA 200.7 SM 3111B SM 3111B-99 SM 3120B SM 3120B-99 SM 3500-Ca B SM 3500-Ca D SM 3500-Ca B-97 SM 3500-Ca D-97
	Captafol	CPEST	GC GC/MS	GC GC/MS	---
	Captan	CPEST	GC GC/MS	GC GC/MS	---
	Carbam-S	CARB	GC GC/MS	GC GC/MS	--
	Carbaryl	CARB	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	EPA 531.1 EPA 531.2 SM 6610
	Carbazole	BNANH	GC/MS	GC/MS	--
	Carbendazim	CARB	LC/MS	LC/MS	--

	Carbofuran	CARB	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	EPA 531.1 EPA 531.2 SM 6610 SM 6651B
	Carbon Disulfide	VOC	GC GC/MS	GC GC/MS	--
	Carbon Tetrachloride	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3® EPA 551.1®
	Carbonaceous Biological Oxygen Demand (cBOD)	GC	5-day Assay	--	--
	Carbophenothion	OPEST	GC GC/MS	GC GC/MS	--
	Carbosulfan	CARB	LC/MS	LC/MS	--
	Ceriodaphnia dubia	AT CT	Acute Toxicity Assay Chronic Toxicity Assay	--	--
	Chemical Oxygen Demand (COD)	GC	Colorimetry Titration	Titration	--
	Chloramben	APEST	GC LC LC/MS	GC LC LC/MS	--
	Chlorate	DBP	--	--	EPA 300.1
	Chlordane (alpha)	CPEST	GC GC/MS	GC GC/MS	---
	Chlordane (gamma)	CPEST	GC GC/MS	GC GC/MS	---
	Chlordane (Technical)	CPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3
	Chlorfenvinphos	OPEST	GC GC/MS	GC GC/MS	--
	Chloride	GC SCNM	Colorimetry IC ISE Titration	Colorimetry IC ISE Titration	ASTM D4327 ASTM D512 (B) ASTM D6508, Rev. 2 EPA 300.0 EPA 300.1 SM 4110B SM 4500-Cl- B SM 4500-Cl- B-97 SM 4500-Cl- D SM 4500-Cl- D-97 SM 4110B-00
	Chlorine Dioxide	DBP	--	--	EPA 327.0, Rev.1 SM 4500-ClO2 C SM 4500-ClO2 C-00 SM 4500-ClO2 D

					SM 4500-ClO2 E SM 4500-ClO2 E-00
	Chlorine Residual, Free	SCNM	--	--	SM 4500-Cl D-00 SM 4500-Cl F-00 SM 4500-Cl G-00 SM 4500-Cl H-00
	Chlorine Residual, Total	SCNM	--	--	SM 4500-Cl D-00 SM 4500-Cl E-00 SM 4500-Cl F-00 SM 4500-Cl G-00 SM 4500-Cl I-00
	Chlorine, Combined	SCNM	--	--	ASTM D1253 SM 4500-Cl D SM 4500-Cl F SM 4500-Cl G
	Chlorine, Free	SCNM	--	--	ASTM D1253 Chlorosense EPA 334.0 SM 4500-Cl D SM 4500-Cl F SM 4500-Cl G SM 4500-Cl H
	Chlorine, Total Residual (TRC) Chlorine, Total	SCNM	Colorimetry ISE Titration	--	ASTM D1253 Chlorosense EPA 334.0 SM 4500-Cl D SM 4500-Cl E SM 4500-Cl F SM 4500-Cl G SM 4500-Cl I
	Chlorite	SCNM	--	--	ASTM D 6581 EPA 300.0 EPA 300.1 EPA 317.0 Rev. 2.0 EPA 326.0 EPA 327.0 Rev. 1.1 SM 4500-ClO2 E SM 4500-ClO2E-00
	Chlorobenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3®
	Chlorobenzilate	CHLH	GC/MS	GC/MS	--
	Chloroethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Chloroform	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3® EPA 551.1®
	Chloromethane (Methyl chloride)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3

	Chloromethyl methyl ether	VOC	GC GC/MS	GC GC/MS	--
	Chloroneb	CPEST	GC	GC	---
	Chlorophyll	GC	Colorimetry	--	--
	Chloroprene	VOC	GC GC/MS	GC GC/MS	--
	Chloropropham	CARB	LC/MS	LC/MS	--
	Chlorothalonil	NPEST	GC GC/MS	GC GC/MS	--
	Chloroxuron	CARB	LC/MS	LC/MS	--
	Chlorpyrifos	OPEST	GC GC/MS	GC GC/MS	--
	Chlorpyrifos Methyl	OPEST	GC GC/MS	GC GC/MS	--
	Chlorthal (Dacthal di-acid, DCPA di-acid)	APEST	GC GC/MS LC	GC GC/MS LC	--
	Chromium (Hexavalent)	M	Colorimetry FLAA IC	Colorimetry FLAA IC	--
	Chromium (Total)	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99
	Chrysene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Clopyralid	APEST	GC GC/MS LC	GC GC/MS LC	--
	Cobalt	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Copper	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	ASTM D1688 (A) ASTM D1688 (C) EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3111B SM 3111B-99 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99
	Corrosivity	WC	--	pH Steel abrasion	--
	Coumaphos	OPEST	GC GC/MS	GC GC/MS	--
	Crotonaldehyde	ALDKE	GC	GC	--

		VOC	GC/MS LC	GC/MS LC	
	Crotoxyphos	OPEST	GC GC/MS	GC GC/MS	--
	Cyanazine	TPEST	GC GC/MS	GC GC/MS	--
	Cyanide (as free Cyanide)	PICNM	--	--	ALPKEM OIA-77 ASTM D2036 (A) ASTM D2036 (B) ASTM D6888 EPA 335.4 Kelada Kelada 01 ME355.01 QuikChem10-204-00-1-X SM 4500-CN- C,E SM 4500-CN-C,E-99 SM 4500-CN- C,F SM 4500-CN-C,F-99 USGS I-3300-85
	Cyanide, Amenable	GC	--	--	SM 4500-CN-C,G SM 4500-CN-C,G-99
	Cyanide, Available	GC	Colorimetry FIA-Diff.-Amp. Titration	Colorimetry Titration	--
	Cyanide, Total	GC	Colorimetry FIA-Diff.-Amp. ISE Titration	Colorimetry ISE Titration	--
	Cyclohexanone	ALDKE	LC	LC	--
	Dalapon	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	EPA 515.1 EPA 515.3 EPA 515.4 EPA 552.1 EPA 552.2 EPA 552.3 EPA 557 SM 6640 B
	Dazomet	CARB	GC GC/MS	GC GC/MS	--
	Decanal	ALDKE	LC	LC	--
	Deethylatrazine	TPEST	GC GC/MS	GC GC/MS	--
	DEF (Butifos)	OPEST	GC GC/MS	GC GC/MS	--
	Deisopropylatrazine	TPEST	GC GC/MS	GC GC/MS	--
	delta-BHC	CPEST	GC GC/MS	GC GC/MS	---
	Demeton-O	OPEST	GC	GC	--

			GC/MS	GC/MS	
	Demeton-S	OPEST	GC GC/MS	GC GC/MS	--
	Di(2-ethylhexyl)adipate	SOCM	--	--	EPA 506 EPA 525.2 EPA 525.3
	Diallate (cis or trans)	CARB	GC GC/MS	GC GC/MS	--
	Diaminoatrazine	TPEST	GC GC/MS	GC GC/MS	--
	Diazinon	OPEST	GC GC/MS	GC GC/MS	--
	Dibenz(a,j)acridine	PAH	GC/MS	GC/MS	--
	Dibenzo[a,e]pyrene	PAH	GC/MS	GC/MS	--
	Dibenzo[a,h]anthracene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Dibenzofuran	BNAN H	GC/MS	GC/MS	--
	Dibromochloromethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3 EPA 551.1
	Dibromomethane (Methylene bromide)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Dicamba	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	EPA 515.1 EPA 515.2 EPA 515.3 EPA 515.4 EPA 555
	Dichlofenthion	OPEST	GC GC/MS	GC GC/MS	--
	Dichlone	CPEST	GC GC/MS	GC GC/MS	---
	Dichlorodifluoromethane	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Dichlorprop (2,4-DP)	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Dichlorprop salts and Esters	APEST	GC LC LC/MS	GC LC LC/MS	--
	Dichlorvos (DDVP)	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Diclofop	APEST	GC GC/MS LC	GC GC/MS LC	--
	Dicrotophos	OPEST	GC GC/MS	GC GC/MS	--
	Dieldrin	CPEST	GC	GC	EPA 505

		GC/MS	GC/MS	EPA 508 EPA 508.1 EPA 525.2
Diethyl ether (Ethyl ether)	VOC	GC GC/MS	GC GC/MS	--
Diethyl phthalate	PHTHL	GC GC/MS	GC GC/MS	--
Diethyl Sulfate	BNANH	GC/MS	GC/MS	--
Diethylstilbestrol	BNANH	GC/MS	GC/MS	--
Dihydrosaffrole	BNANH	GC/MS	GC/MS	--
Diisopropyl ether	VOC	GC/MS	GC/MS	--
Dimethenamid	NPEST	GC GC/MS	GC GC/MS	--
Dimethoate	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
Dimethyl phthalate	PHTHL	GC GC/MS	GC GC/MS	--
Di-n-butyl phthalate	PHTHL	GC GC/MS	GC GC/MS	--
Di-n-octyl phthalate	PHTHL	GC GC/MS	GC GC/MS	--
Dinoseb (2-sec-butyl-4,6-Dinitrophenol)	APESTPHEN	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	EPA 515.1 EPA 515.2 EPA 515.3 EPA 515.4 EPA 555 SM 6640 B
Dioxacarb	CARB	LC	LC	--
Dioxathion	OPEST	GC GC/MS	GC GC/MS	--
Diphenylamine	BNANH	GC/MS	GC/MS	--
Diquat	PESTSOCM	LC	LC	EPA 549.2
Disulfoton	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
Diuron	CARB	LC LC/MS	LC LC/MS	--
Endosulfan I	CPEST	GC GC/MS	GC GC/MS	---
Endosulfan II	CPEST	GC GC/MS	GC GC/MS	---
Endosulfan Sulfate	CPEST	GC GC/MS	GC GC/MS	---
Endothall	PESTSOCM	LC	LC	EPA 548.1
Endrin	CPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 508

					EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Endrin Aldehyde	CPEST	GC GC/MS	GC GC/MS	---
	Endrin Ketone	CPEST	GC GC/MS	GC GC/MS	---
	Epichlorohydrin	VOC	GC GC/MS	GC GC/MS	--
	EPN	OPEST	GC GC/MS	GC GC/MS	--
	EPTC (Eptam)	CARB	GC GC/MS LC/MS	GC GC/MS LC/MS	--
	EPTOX Extraction	WE	--	Leach Test	
	Ethalfluralin	NPEST	GC GC/MS	GC GC/MS	--
	Ethanol	VOC	GC GC/MS	GC GC/MS	--
	Ethion	OPEST	GC GC/MS	GC GC/MS	--
	Ethoprop	OPEST	GC GC/MS	GC GC/MS	--
	Ethyl Acetate	VOC	GC GC/MS	GC GC/MS	--
	Ethyl Carbamate	CARB	GC GC/MS	GC GC/MS	--
	Ethyl Methacrylate	VOC	GC GC/MS	GC GC/MS	--
	Ethyl Methanesulfonate	BNAN H	GC/MS	GC/MS	--
	Ethylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3®
	Ethylene Dibromide (EDB)	PEST SOCM	--	--	EPA 504.1 EPA 524.3 EPA 551.1
	Ethylene Glycol	VOC	GC GC/MS	GC GC/MS	--
	Ethylene Oxide	VOC	GC GC/MS	GC GC/MS	--
	Famphur	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Fenarimol	NPEST	GC GC/MS	GC GC/MS	--
	Fenitrothion	OPEST	GC GC/MS	GC GC/MS	--
	Fensulfothion	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Fenthion	OPEST	GC	GC	--

			GC/MS	GC/MS	
	Fenuron	CARB	LC LC/MS	LC LC/MS	--
	Fenuron-TCA	CARB	LC/MS	LC/MS	--
	Fenvalerate	PEST	LC	LC	--
	Fluchloralin	BNANH	GC/MS	GC/MS	--
	Fluometuron	CARB	LC LC/MS	LC LC/MS	--
	Fluoranthene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Fluorene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Fluoride	GC	Colorimetry IC ISE	Colorimetry IC ISE	ASTM D1179 (B) ASTM D4327 ASTM D6508, Rev 2 EPA 300.0 EPA 300.1 HACH Method 10225 SM 4110B SM 4500F- B, D SM 4500F- B, D-97 SM 4500F- C SM 4500F- C-97 SM 4500F- E SM 4500F- E-97 SM 4110B-00 Technicon 129-71W Technicon 380-75WE
	Fonofos	OPEST	GC GC/MS	GC GC/MS	--
	Formaldehyde	ALDKE	LC	LC	--
	Glyphosate	PEST SOCM	LC	LC	EPA 547 SM 6651B
	Gold	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Hardness, Total as CaCO3	GC	Colorimetry Titration FLAA ICP	--	--
	Heptachlor	CPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Heptachlor Epoxide	CPEST	GC	GC	EPA 505

			GC/MS	GC/MS	EPA 508 EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Heptanal	ALDKE	LC	LC	--
	Hexachlorobenzene	CHLH	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Hexachlorobutadiene	CHLH VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Hexachlorocyclopentadiene	CHLH	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Hexachloroethane	CHLH VOC	GC GC/MS	GC GC/MS	--
	Hexachlorophene	CHLH	GC/MS	GC/MS	--
	Hexachloropropene	CHLH	GC/MS	GC/MS	--
	Hexamethylphosphoramide	OPEST	GC GC/MS	GC GC/MS	--
	Hexanal	ALDKE	LC	LC	--
	Hexane Ext. Material (HEM), as Oil&Grease	GC	Extraction/ Gravimetry	--	--
	Hexane, n-	VOC	GC/MS	GC/MS	--
	Hexazinone	NPEST	GC GC/MS	GC GC/MS	--
	HMX	EXPLO	LC	LC	--
	Hydroquinone	BNANH	GC/MS	GC/MS	--
	Ignitability	WC	--	Pensky-Martens Closed Cup Setaflash Closed Cup Small Scale Closed Cup	--
	Indeno(1,2,3-cd)pyrene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Iodomethane (Methyl iodide)	VOC	GC GC/MS	GC GC/MS	--
	Iridium	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Iron	M	Colorimetry FLAA GFAA	Colorimetry FLAA GFAA	EPA 200.5 Axial EPA 200.7 EPA 200.9

			ICP ICP/MS	ICP ICP/MS	SM 3111B SM 3111B-99 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99
	Isobutyl alcohol (2-Methyl-1-propanol)	VOC	GC GC/MS	GC GC/MS	--
	Isodrin	CPEST	GC GC/MS	GC GC/MS	---
	Isophorone	NARO M	GC GC/MS	GC GC/MS	--
	Isopropalin	NPEST	GC GC/MS	GC GC/MS	--
	Isopropyl alcohol (2-Propanol)	VOC	GC GC/MS	GC GC/MS	--
	Isopropylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Isosafrole	BNAN H	GC/MS	GC/MS	--
	Isovaleraldehyde	ALDKE	LC	LC	--
	Kepone	CPEST	GC GC/MS	GC GC/MS	---
	Kjeldahl Nitrogen, Total (TKN)	GC	Colorimetry ISE Titration	Colorimetry ISE Titration	--
	KN Methyl	CARB	GC GC/MS	GC GC/MS	--
	Lead	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	ASTM D3559 (D) EPA 200.5 Axial EPA 200.8 EPA 200.9 Palintest 1011 SM 3113B SM 3113B-99
	Leptophos	OPEST	GC GC/MS	GC GC/MS	--
	Lindane (gamma-BHC)	CPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Linuron	CARB	LC LC/MS	LC LC/MS	--
	Lithium	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Magnesium	M	FLAA FPAA ICP ICP/MS	FLAA FPAA ICP ICP/MS	ASTM D511 (A) ASTM D511 (B) ASTM D6919 EPA 200.5 Axial EPA 200.7 SM 3111B

				SM 3111B-99 SM 3120B SM 3120B-99 SM 3500-Mg B
Malathion	OPEST	GC GC/MS	GC GC/MS	--
Maleic anhydride	BNANH	GC/MS	GC/MS	--
Malononitrile	VOC	GC GC/MS	GC GC/MS	--
Manganese	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3111B SM 3111B-99 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99
MCPA	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
MCPB	APEST	GC GC/MS LC	GC GC/MS LC	--
MCPP (Mecoprop)	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
m-Cumenyl methylcarbamate	CARB	LC LC/MS	LC LC/MS	--
Mercury	M	CVAA CVAFS LC ICP/MS ThermDecAA	CVAA CVAFS LC ICP/MS ThermDecAA	ASTM D3223 EPA 200.8 EPA 245.1 EPA 245.2 SM 3112B SM 3112B-99
Mercury, Organo-	M	LC	LC	
Mercury, trace level	M	CVAFS LC ICP/MS ThermDecAA	CVAFS LC ICP/MS ThermDecAA	--
Merphos	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
Mestranol	BNANH	GC/MS	GC/MS	--
Methacrylonitrile	VOC	GC GC/MS	GC GC/MS	--
Methamidophos	OPEST	GC GC/MS	GC GC/MS	--
Methanol	VOC	GC GC/MS	GC GC/MS	--

	Methapyrilene	BNANH	GC/MS	GC/MS	--
	Methiocarb	CARB	LC LC/MS	LC LC/MS	--
	Methomyl	CARB	LC LC/MS	LC LC/MS	EPA 531.1 EPA 531.2 SM 6610
	Methoxychlor	CPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3 EPA 551.1
	Methyl Acrylate	VOC	GC GC/MS	GC GC/MS	--
	Methyl ethyl ketone (MEK,2-Butanone)	VOC	GC GC/MS	GC GC/MS	--
	Methyl Methacrylate	VOC	GC GC/MS	GC GC/MS	--
	Methyl Methanesulfonate	BNANH	GC/MS	GC/MS	--
	Methyl tert-Butyl Ether (MtBE)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Methylene Chloride	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3®
	Metolachlor	NPEST SOCN	GC GC/MS	GC GC/MS	EPA 507 EPA 508.1 EPA 525.2 EPA 551.1
	Metolcarb	CARB	LC LC/MS	LC LC/MS	--
	Metribuzin	NPEST SOCN	GC GC/MS	GC GC/MS	EPA 507 EPA 508.1 EPA 525.2 EPA 551.1
	Mevinphos	OPEST	GC GC/MS	GC GC/MS	--
	Mexacarbate	CARB	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Mirex	CPEST	GC GC/MS	GC GC/MS	---
	Molinate	CARB	LC LC/MS	LC LC/MS	--
	Molybdenum	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Monocrotophos	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Monuron	CARB	LC	LC	--

		LC/MS	LC/MS	
Monuron-TCA	CARB	LC/MS	LC/MS	--
m-Tolualdehyde	ALDKE	LC	LC	--
m-Xylene	VOC	GC GC/MS	GC GC/MS	--
Nabam	CARB	GC GC/MS	GC GC/MS	--
Nabonate	CARB	GC GC/MS	GC GC/MS	--
Naled	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
Naphthalene	PAH VOC	GC GC/MS LC	GC GC/MS LC	EPA 502.2 EPA 524.2 EPA 524.3
Napropamide	NPEST	GC GC/MS	GC GC/MS	--
n-Butyl Alcohol (1-Butanol)	VOC	GC GC/MS	GC GC/MS	--
n-Butylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
Neburon	CARB	LC/MS	LC/MS	--
Nickel	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3111B SM 3111B-99 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99
Nicotine	BNANH	GC/MS	GC/MS	--
Nitrate	GC PICNM	Colorimetry IC ISE	Colorimetry IC ISE	ASTM D3867 (A) ASTM D3867 (B) ASTM D4327 ASTM D6508, Rev 2 EPA 300.0 EPA 300.1 EPA 353.2 Hach Method 10206 Orion 601 SM 4110B SM 4110B-00 SM 4500-NO3- D SM 4500-NO3- D-00 SM 4500-NO3- E SM 4500-NO3- E-00 SM 4500-NO3- F

					SM 4500-NO3-F-00 Systea Easy Waters B-1011
	Nitrate + Nitrite	GC PICNM	Colorimetry IC	Colorimetry IC	ASTM D3867 (A) ASTM D3867 (B) ASTM D4327 ASTM D6508, Rev 2 EPA 300.0 EPA 300.1 EPA 353.2 SM 4110B SM 4110B-00 SM 4500-NO3- D SM 4500-NO3-D-00 SM 4500-NO3- E SM 4500-NO3- E-00 SM 4500-NO3- F SM 4500-NO3-F-00 Waters B-1011
	Nitrite	GC PICNM	Colorimetry IC	Colorimetry IC	ASTM D3867 (A) ASTM D3867 (B) ASTM D4327 ASTM D6508, Rev 2 EPA 300.0 EPA 300.1 EPA 353.2 SM 4110B SM 4110B-00 SM 4500-NO2- B SM 4500-NO2- B-00 SM 4500-NO3- E SM 4500-NO3- E-00 SM 4500-NO3- F SM 4500-NO3-F-00 Systea Easy Waters B-1011
	Nitrobenzene	EXPLO NARO M	GC GC/MS LC	GC GC/MS LC	--
	Nitrofen	BNAN H	GC/MS	GC/MS	--
	Nitroglycerin	EXPLO	LC	LC	--
	N-Nitrosodiethylamine	NSAMI	GC GC/MS	GC GC/MS	--
	N-Nitrosodimethylamine	NSAMI	GC GC/MS	GC GC/MS	--
	N-Nitrosodi-n-butylamine	NSAMI	GC	GC	--

		GC/MS	GC/MS	
N-Nitrosodi-n-propylamine	NSAMI	GC GC/MS	GC GC/MS	--
N-Nitrosodiphenylamine	NSAMI	GC GC/MS	GC GC/MS	--
N-Nitrosomethylethylamine	NSAMI	GC GC/MS	GC GC/MS	--
N-Nitrosomorpholine	NSAMI	GC GC/MS	GC GC/MS	--
N-Nitrosopiperidine	NSAMI	GC GC/MS	GC GC/MS	--
N-Nitrosopyrrolidine	NSAMI	GC GC/MS	GC GC/MS	--
Nonanal	ALDKE	LC	LC	--
Norflurazon	NPEST	GC GC/MS	GC GC/MS	--
n-Propylamine	VOC	GC/MS	GC/MS	--
n-Propylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
O,O,O-Triethyl phosphorothioate	BNANH	GC/MS	GC/MS	--
o-Anisidine	BNANH	GC/MS	GC/MS	--
o-Chlorophenyl Thiourea	CARB	LC/MS	LC/MS	--
Octamethyl Pyrophosphoramide	BNANH	GC/MS	GC/MS	--
Octanal	ALDKE	LC	LC	--
Organic Carbon, Dissolved (DOC)	SCNM	--	--	EPA 415.3 SM 5310B SM 5310C SM 5310D
Organic Carbon, Total (TOC)	GC SCNM	NonDispersive IR Microcoulometry	NonDispersive IR Microcoulometry	EPA 415.3 SM 5310B SM 5310C SM 5310D
Organic Halides, (Total-TOX and Adsorbable-AOX)	GC	NonDispersive IR Microcoulometry	NonDispersive IR Microcoulometry	
Orthophosphate	GC SCNM	Colorimetry IC	Colorimetry IC	ASTM D4327 ASTM D515 (A) ASTM D6508, Rev. 2 EPA 300.0 EPA 300.1 EPA 365.1 SM 4110B SM 4110B-00 SM 4500-P E SM 4500-P F USGS I-1601-85 USGS I-2598-85 USGS I-2601-90
Osmium	M	FLAA	FLAA	--

			GFAA ICP ICP/MS	GFAA ICP ICP/MS	
	o-Tolualdehyde	ALDKE	LC	LC	--
	o-Toluidine	BNAN H VOC	GC/MS	GC/MS	--
	Oxamyl (Vydate)	CARB	LC LC/MS	LC LC/MS	EPA 531.1 EPA 531.2 SM 6610 SM 6651B
	Oxygen, Dissolved	GC	ISE	--	--
	o-Xylene	VOC	GC GC/MS	GC GC/MS	--
	Ozone	DBP	--	--	SM 4500-O3 B-97 SM 4500-O3 B
	Palladium	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Paraldehyde	VOC	GC GC/MS	GC GC/MS	--
	Paraquat	PEST	LC	LC	--
	Parathion (Parathion Ethyl)	OPEST	GC GC/MS	GC GC/MS	--
	Parathion Methyl	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	p-Benzoquinone	BNAN H	GC/MS	GC/MS	--
	PCBs (as Aroclors) Screening	SOCM	--	--	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3
	PCBs (as Decachlorobiphenyl)	SOCM			EPA 508A
	p-Cresidine	BNAN H	GC/MS	GC/MS	--
	Pebulate	CARB	LC/MS	LC/MS	--
	Pendimethalin	NPEST	GC GC/MS	GC GC/MS	--
	Pentachlorobenzene	CHLH	GC GC/MS	GC GC/MS	--
	Pentachloroethane	CHLH VOC	GC/MS	GC/MS	--
	Pentachloronitrobenzene (PCNB)	CPEST NARO M	GC GC/MS	GC GC/MS	---
	Pentachlorophenol	APEST PHEN	GC GC/MS LC	GC GC/MS LC	ASTM D5317 EPA 515.1 EPA 515.2 EPA 515.3 EPA 515.4 EPA 525.2

					EPA 525.3 EPA 555 SM 6640 B
	Pentanal (Valeraldehyde)	ALDKE	LC	LC	--
	Moisture Content	GC	--	Karl Fischer	--
	Percent Solids	GC	--	Gravimetry	--
	Permethrin	PEST	GC	GC	--
	Perthane	CPEST	GC	GC	---
	PETN (Pentaerythritol tetranitrate)	EXPLO	LC	LC	--
	pH	GC SCNM	ISE	ISE	ASTM D1293 EPA 150.1 EPA 150.2 SM 4500-H+ B SM 4500-H+ B-00
	Phenacetin	BNAN H	GC/MS	GC/MS	--
	Phenanthrene	PAH	GC GC/MS LC	GC GC/MS LC	--
	Phenobarbital	BNAN H	GC/MS	GC/MS	--
	Phenol	PHEN	GC GC/MS	GC GC/MS	--
	Phenolics, Total	GC	Colorimetry	Colorimetry	--
	Phorate	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
	Phosalone	OPEST	GC GC/MS	GC GC/MS	--
	Phosmet (Imidan)	OPEST	GC GC/MS	GC GC/MS	--
	Phosphamidon	OPEST	GC GC/MS	GC GC/MS	--
	Phosphorus, Total	GC	Colorimetry	Colorimetry ICP	--
	Phthalic anhydride	BNAN H	GC/MS	GC/MS	--
	Picloram	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	ASTM D5317 EPA 515.1 EPA 515.2 EPA 515.3 EPA 515.4 EPA 555 SM 6640 B
	Picric Acid (Trinitrophenol)	EXPLO	LC	LC	--
	Pimephales promelas	AT CT	Acute Toxicity Assay Chronic Toxicity Assay	--	--
	Piperonyl Sulfoxide	BNAN H	GC/MS	GC/MS	--
	p-Isopropyltoluene (4-Isopropyltoluene)	VOC	GC	GC	EPA 502.2

	GC/MS	GC/MS	EPA 524.2 EPA 524.3
Platinum	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
Potassium	M	FPAA FLAA ICP ICP/MS	FPAA FLAA ICP ICP/MS	--
Promecarb	CARB	LC LC/MS	LC LC/MS	--
Prometon	TPEST	GC GC/MS	GC GC/MS	--
Prometryn	TPEST	GC GC/MS	GC GC/MS	--
Pronamide	NPEST	GC GC/MS	GC GC/MS	--
Propachlor	NPEST SOCN	GC GC/MS LC/MS	GC GC/MS LC/MS	EPA 507 EPA 508.1 EPA 525.2
Propanal (Propionaldehyde)	ALDKE	LC	LC	--
Propanil	CARB	LC	LC	--
Propanil	NPEST	GC GC/MS	GC GC/MS	--
Propargyl Alcohol	VOC	GC GC/MS	GC GC/MS	--
Propazine	TPEST	GC GC/MS	GC GC/MS	--
Propham	CARB	LC LC/MS	LC LC/MS	--
Propionitrile (Ethyl Cyanide)	VOC	GC GC/MS	GC GC/MS	--
Propylene Glycol	VOC	GC/MS	GC/MS	--
Propylthiouracil	BNANH	GC/MS	GC/MS	--
Prosulfocarb	CARB	LC/MS	LC/MS	--
p-Tolualdehyde	ALDKE	LC	LC	--
p-Xylene	VOC	GC GC/MS	GC GC/MS	--
Pyrene	PAH	GC GC/MS LC	GC GC/MS LC	--
Pyrethrin I	PEST	LC	LC	--
Pyrethrin II	PEST	LC	LC	--
Pyridine	BNANH VOC	GC/MS	GC/MS	--
Qualitative FID Fingerprint	SSCAN	GC	GC	
RDX	EXPLO	LC	LC	--
Reagent Water Shake Extraction (ASTM Leach Test)	WE	--	Leach Test	--
Residue, Filterable (TDS)	GC SCNM	Gravimetry	--	SM 2540C SM 2540C-97
Residue, Nonfilterable (TSS)	GC	Gravimetry	--	--

	Residue, Settleable	GC	Gravimetry	--	--
	Residue, Total	GC	Gravimetry	Gravimetry	--
	Residue, Volatile (TVS)	GC	Gravimetry	Gravimetry	--
	Residue, Volatile, Nonfilterable (TVSS)	GC	Gravimetry	--	--
	Resorcinol	BNAN H	GC/MS	GC/MS	--
	Rhodium	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Ronnel	OPEST	GC GC/MS	GC GC/MS	--
	Rotenone	PEST	LC/MS	LC/MS	--
	Ruthenium	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	--
	Safrole	BNAN H	GC/MS	GC/MS	--
	Secbumeton	NPEST	LC	LC	--
	sec-Butylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
	Selanastrum capricornutum	CT	Chronic Toxicity	--	--
	Selenium	M	GFAA HydrideAA ICP ICP/MS	GFAA HydrideAA ICP ICP/MS	ASTM D3859 (A) ASTM D3859 (B) EPA 200.5 Axial EPA 200.8 EPA 200.9 SM 3113B SM 3113B-99 SM 3114B SM 3114B-97
	Siduron	CARB	LC LC/MS	LC LC/MS	--
	Silica	GC	Colorimetry ICP	--	ASTM D859 EPA 200.5 Axial ICP EPA 200.7 SM 3120B SM 3120B-99 SM 4500-Si D SM 4500-Si E SM 4500-Si F SM 4500-SiO2 C SM 4500-SiO2-C-97 SM 4500-SiO2 D SM 4500-SiO2-D-97 SM 4500-SiO2 E SM 4500-SiO2-E-97 USGS I-1700-85

					USGS I-2700-85
	Silicon	M	Colorimetry ICP ICP/MS	ICP ICP/MS	--
	Silver	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	EPA 200.5 Axial EPA 200.7 EPA 200.8 EPA 200.9 SM 3111B SM 3111B-99 SM 3113B SM 3113B-99 SM 3120B SM 3120B-99 USGS I-3720-85
	Silvex (2,4,5-TP)	APEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	ASTM D5317 EPA 515.1 EPA 515.2 EPA 515.3 EPA 515.4 EPA 555 SM 6640 B
	Simazine	TPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 507 EPA 508.1 EPA 523 EPA 525.2 EPA 525.3 EPA 536 EPA 551.1
	Sodium	M	FPAA FLAA IC ICP ICP/MS	FPAA FLAA IC ICP ICP/MS	ASTM D6919 EPA 200.5 Axial EPA 200.7 EPA 200.8 SM 3111B SM 3111B-99
	Specific Conductance (Conductivity)	GC SCNM	ISE	ISE	ASTM D1125 (A) SM 2510 B
	SPLP Extraction	WE	--	Leach test	--
	ß-Propiolactone	VOC	GC GC/MS	GC GC/MS	--
	Strobane	CPEST	GC	GC	---
	Strontium	M	FLAA	FLAA	---

		ICP ICP/MS	ICP ICP/MS	
Strychnine	PEST	GC/MS	GC/MS	--
Styrene	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3®
Sulfallate (Thioallate)	CARB	GC GC/MS	GC GC/MS	--
Sulfate	GC SCNM	Colorimetry IC	Colorimetry IC	ASTM D4327 ASTM D516 ASTM D6508, Rev. 2 EPA 300.0 EPA 300.1 EPA 375.2 SM 4110B SM 4110B-00 SM 4500-SO42- C, D SM 4500-SO42- E SM 4500-SO42- F
Sulfide	GC	Colorimetry ISE Titration	Colorimetry ISE Titration	--
Sulfides, Acid-Soluble and Acid-Insoluble	GC	Titration	Titration	--
Sulfite	GC	Titration	Titration	--
Sulfotepp (Tetraethyl dithiopyrophosphate)	OPEST	GC GC/MS	GC GC/MS	--
Surfactatnts [Foaming agents (MBAS)]	SCNM	Colorimetry	--	SM 5540C
SUVA (calc.)	SCNM	--	--	EPA 415.3
SUVA (Specific UV Absorbance)	SCNM	--	--	EPA 415.3
t-Butyl Alcohol	VOC	GC GC/MS	GC GC/MS	--
TCLP Extraction	WC	--	Leach Test	--
TCMTB	NPEST	LC	LC	--
Tebuthiuron	CARB	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
TEPP (Tetraethyl pyrophosphate)	BNANH OPEST	GC GC/MS	GC GC/MS	--
Terbacil	NPEST	GC GC/MS	GC GC/MS	--
Terbufos	OPEST	GC GC/MS	GC GC/MS	--
Terbutryn	TPEST	GC GC/MS	GC GC/MS	--
tert-Butylbenzene	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2 EPA 524.3
Tetrachlorocatechol	PHEN	GC GC/MS	GC GC/MS	--
Tetrachloroethene	VOC	GC	GC	EPA 502.2®

		GC/MS	GC/MS	EPA 524.2® EPA 524.3® EPA 551.1®
Tetrachloroguaiacol	PHEN	GC GC/MS	GC GC/MS	--
Tetrachlorvinphos (Stirofos)	OPEST	GC GC/MS	GC GC/MS	--
Tetraethyl Dithiopyrophosphate	BNANH	GC/MS	GC/MS	--
Tetrahydrofuran	VOC	GC/MS	GC/MS	--
Tetryl	EXPLO	LC	LC	--
Thallium	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	EPA 200.8 EPA 200.9
Thiodicarb	CARB	LC LC/MS	LC LC/MS	--
Thiofanox	CARB	LC/MS	LC/MS	--
Thionazin (O,O-Diethyl O-2-pyrazinyl phosphorothioate)	BNANH OPEST	GC GC/MS	GC GC/MS	--
Thiophanate-methyl	CARB	LC/MS	LC/MS	--
Thiophenol (Benzenethiol)	BNANH	GC/MS	GC/MS	--
Tin	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	---
Titanium	M	FLAA GFAA ICP ICP/MS	FLAA GFAA ICP ICP/MS	---
Tokuthion (Prothiofos)	OPEST	GC GC/MS	GC GC/MS	--
Toluene	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3®
Toluene Diisocyanate	BNANH	GC/MS	GC/MS	--
Toxaphene	CPEST	GC GC/MS	GC GC/MS	EPA 505 EPA 508 EPA 508.1 EPA 525.2 EPA 525.3
Triadimefon	NPEST	GC GC/MS	GC GC/MS	--
Triallate	CARB	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
Trichloroethene	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3® EPA 551.1®
Trichlorofluoromethane (Fluorotrichloromethane)	VOC	GC GC/MS	GC GC/MS	EPA 502.2 EPA 524.2

				EPA 524.3
Trichloronate	OPEST	GC GC/MS	GC GC/MS	--
Trichlorosyringol	PHEN	GC GC/MS	GC GC/MS	--
Trichlorphon	OPEST	GC GC/MS LC LC/MS	GC GC/MS LC LC/MS	--
Triclopyr	APEST	GC GC/MS LC	GC GC/MS LC	--
Trifluralin	NPEST	GC GC/MS	GC GC/MS	--
Trimethyl Phosphate	BNANH	GC/MS	GC/MS	--
Tri-o-cresylphosphate (TOCP)	OPEST	GC GC/MS	GC GC/MS	--
Tri-p-tolyl Phosphate	BNANH	GC/MS	GC/MS	--
Tris(2,3-dibromopropyl) phosphate	BNANH	GC/MS	GC/MS	--
Tungsten	M	ICP ICP/MS	ICP ICP/MS	--
Turbidity	GC SCNM	Colorimetry	--	AMI Turbiwell EPA 180.1 GLI Method 2 HACH FilterTrak 10133 Mitchell M5271 Mitchell M5331 Orion AQ4500 SM 2130B
UV254	SCNM	--	--	EPA 415.3 SM 5910B
Vanadium	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	---
Vapam	PEST	GC	GC	--
Vernolate	CARB	LC/MS	LC/MS	--
Vinyl Acetate	VOC	GC GC/MS	GC GC/MS	--
Vinyl Chloride	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3®
Xylenes, Total	VOC	GC GC/MS	GC GC/MS	EPA 502.2® EPA 524.2® EPA 524.3®
Zinc	M	Colorimetry FLAA GFAA ICP ICP/MS	Colorimetry FLAA GFAA ICP ICP/MS	EPA 200.5 Axial EPA 200.7 EPA 200.8 SM 3111B SM 3111B-99 SM 3120B

					SM 3120B-99
	Ziram	CARB	GC GC/MS	GC GC/MS	--
	Zirconium	M	ICP ICP/MS	ICP ICP/MS	--

Class codes:

ALDKE = Aldehydes and ketones
APEST = Acid pesticides
AT = Toxicity, acute
BENZ = Benzidines (BNA)
BNA = Base/Neutral/Acid extractables (BNA)
BNANH = Non-Halogenated Organics (BNA)
CARB = Carbamate pesticides
CHLH = Chlorinated hydrocarbons (BNA)
CPEST = Organochlorine pesticides
CT = Toxicity, chronic
DBP = Disinfection by-product
EXPLO = Explosives residue
GC = General chemistry
GRP = Analyte Group
HALO = Haloethers (BNA)
M = Metals
NAROM = Nitroaromatics (BNA)
NPEST = Nitrogen pesticides
NSAMI= Nitrosamines (BNA)
OPEST = Organophosphorus pesticides
PAH = Polynuclear aromatic hydrocarbons (BNA)
PEST = Pesticides, Other
PHEN = Phenols (BNA)
PHTHL = Pthalates (BNA)
POP = Persistent Organic Pollutants
PICM = Primary inorganic contaminants, metals
PICNM = Primary inorganic contaminants, non-metals
SCM = Secondary contaminants, metals
SCNM = Secondary contaminants, non-metals
SOCD = Synthetic organic compounds, dioxin
SOCH = Synthetic organic compounds, herbicides
SOCM = Synthetic organic compounds, miscellaneous
SOCCP = Synthetic organic compounds, chlor. pesticides
SOCNP = Synthetic organic compounds, N-P pesticides
SSCAN = Solvent scan
TPEST= Triazine pesticides
VOC = Volatile organic compounds
WC = Hazardous Waste Characteristics
WE = Leaching Procedures

Technology abbreviations

5-d Assay = Demand assays
AT = Acute Toxicity Assay
CT = Chronic Toxicity Assay
Colorimetry = Colorimetry / Turbidimetry
Comb-Ox = Combustion or Oxidation
CVAA = Cold Vapor Atomic Absorption
CVAFS = Cold Vapor Atomic Fluorescence Spectrometry
Ext-Grav = Extraction / Gravimetry
FIA-Diff.-Amp. = Flow Injection Analysis; Diffusion+Amperometry
KF = Karl Fischer
LC = Liquid Chromatography
LC/MS = Liquid Chromatography-Mass Spectrometry
NDIR = NonDispersive IR-Microcoulometry
ThermDecAA = Thermal Decomposition Atomic Absorption
Titration = Titrimetry or Potentiometric Titration
FP = Flame Photometry
GC = Gas Chromatography
GC/MS = Gas Chromatography-Mass Spectrometry
GFAA = Graphite Furnace Atomic Absorption
Grav = Gravimetry - Residue
HR-GC/MS = High Resolution GC/MS
HydrideAA = Hydride Atomic Absorption
IC = Ion Chromatography
ICP = ICP Emission Spectrometry
ICP/MS = ICP-Mass Spectrometry
ISE = Electrometric Assay

SECTION Y. EFFECTIVE DATE. This rule takes effect on the first day of September 2018, following approval by the Natural Resources Board and publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

SECTION Z. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on [DATE].