Statutory Authority:

N.J.S.A. 13:1E-1, 13:1K–6, 26:2C–1, 26: 2D–70, 58:10–23.11, 58:10A-1, 58:12A–1 and 58:12A–26 et seq.

Date Last Amended:
APRIL 20, 2015

For regulatory history and effective dates see the New Jersey Administrative Code

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N.J.A.C. 7:18
REGULATIONS GOVERNING THE CERTIFICATION OF LABORATORIES AND ENVIRONMENTAL MEASUREMENTS

SUBCHAPTER 1 GENERAL PROVISIONS

7:18-1.1 Scope and Authority

(a) This chapter constitutes the Department's regulations governing certification of laboratories performing sample analyses for compliance with any of the statutes listed in (c) below, with any regulations or orders issued pursuant to those statutes, or with the Contract Laboratory Program.

(b) This chapter establishes the procedures for obtaining and maintaining certifications, and the criteria and procedures that certified environmental laboratories shall follow in handling, preserving, and analyzing regulatory samples, and in collecting samples for acute toxicity testing.

(c) This chapter is adopted pursuant to the following statutes:

1. The Safe Drinking Water Act, N.J.S.A. 58:12A-1 et seq.;

2. The Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.;

3. The portion of the Radiation Protection Act governing radon and radon progeny, N.J.S.A. 26:2D-70 et seq.;

4. The Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq.;

5. The Industrial Site Recovery Act, N.J.S.A. 13:1K-6 et seq.;

6. The Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq.

7. The Private Well Testing Act, N.J.S.A. 58:12A-26 et seq.; and

8. The Air Pollution Control Act, N.J.S.A. 26:2C-1 et seq.

7:18-1.2 Construction

These rules shall be liberally construed to permit the Department to discharge its statutory functions and to effectuate the purposes of the laboratory certification program.

7:18-1.3 Purposes of the Regulations

(a) This chapter is promulgated for the following purposes:

1. To establish a certification program for laboratories performing environmental analyses, and to confine a laboratory's scope of certification to the specific parameters, techniques, method references, and corresponding approved methods as shown on the certified environmental laboratory's annual certified parameter list;

2. To establish the administrative procedures to be followed by certified environmental laboratories, and by laboratories seeking to become certified environmental laboratories;

3. To require that certification status be contingent upon continued compliance with the standards of performance set forth herein, including but not limited to standards pertaining to facility conditions, equipment and supplies, personnel, quality assurance and quality control, data reporting and data maintenance; and

4. To establish the enforcement procedures that the Department shall follow to ensure that a certified environmental laboratory is in compliance with this chapter.

(b) Compliance with this chapter will assist a laboratory in meeting the data quality requirements of State regulatory programs with regard to accuracy, precision, completeness, comparability, and representativeness. These rules regulate sample collection (acute toxicity testing only), handling, preservation, and analysis. The laboratory shall produce data with known quality assurance and quality control procedures, and in accordance with approved techniques and reference methods.

7:18-1.4 Certification Program Requirements

(a) A laboratory may request certification in the New Jersey Environmental Laboratory Certification Program (NJ-ELCP) pursuant to N.J.A.C. 7:18 or accreditation in the New Jersey National Environmental Laboratory Accreditation Program (NJ-NELAP) pursuant to the TNI Standards, incorporated herein by reference at N.J.A.C. 7:18-1.5(d).

1. A laboratory shall not apply for or maintain simultaneous certification in the NJ- ELCP and NJ-NELAP.

2. A laboratory that has obtained NJ-NELAP accreditation pursuant to the TNI Standards shall comply with all sampling, enforcement and data submittal requirements as established by N.J.A.C. 7:18 pursuant to the statutes specified at N.J.A.C. 7:18-1.1(c).

(b) A laboratory that analyzes samples for the purpose of establishing compliance with any regulatory program shall obtain and maintain certification as a certified environmental laboratory in accordance with this chapter. An analysis performed by a laboratory that is not a certified environmental laboratory does not establish compliance with any regulatory program.

(c) When analyzing regulatory samples, a certified environmental laboratory shall perform only those methods for which it has received certification or has received approval to use as alternate test procedures (ATPs) pursuant to N.J.A.C. 7:18-2.20. The certified environmental laboratory shall analyze only those parameters that are included in a valid annual certified parameter list (ACPL) issued pursuant to N.J.A.C. 7:18-2.6(b).

(d) The Department-Sanctioned Analytical Methods (DSAMs) are the methods approved for use by certified environmental laboratories. The designation of a method as a DSAM is described in N.J.A.C. 7:18-2.21.

(e) Under N.J.A.C. 7:18-2.6(b), a certified environmental laboratory will receive a certificate and an Annual Certified Parameter List (ACPL) from the Department. The certified environmental laboratory shall conspicuously display these documents in a location on its premises visible to the public.

7:18-1.5 Incorporation by Reference

(a) The following regulations promulgated by the USEPA, together with all amendments and supplements, are incorporated by reference into this chapter:

1. The "National Primary and Secondary Drinking Water Regulations," 40 CFR 141 and 40 CFR 143;

2. The "Guidelines Establishing Test Procedures for the Analysis of Pollutants," 40 CFR 136.

3. The methods listed in Subchapter I, Solid Waste, 40 CFR 260, 261.

4. The methods for the analysis of airborne emissions, listed in 40 CFR Part 151, Appendix M; Part 60, Appendix A; Part 61, Appendix B; and Part 63, Appendix A; and

5. The Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA document EPA/625/R-96/010b).

(b) All existing CERCLA CLP methods, and all future new or modified CERCLA CLP methods, are incorporated by reference into this chapter. CERCLA CLP methods are available from: EPA Contract Laboratory Program, Sample Management Office, P.O. Box 815, Alexandria, VA 22313. All new or modified methods are incorporated when Invitation for Bid (Bid) documents containing these methods are published in the Commerce Business Daily. The Commerce Business Daily is available from U. S. Department of Commerce, Washington, DC 20230. (202) 783-3238.

(c) The Department's analytical methods for sludge analysis at N.J.A.C. 7:14C, together with all amendments and supplements, are incorporated by reference into this chapter.

(d) The TNI Standards (2009), together with amendments and supplements thereto, are incorporated by reference into this chapter. Copies of the TNI Standards are available on the TNI website at www.nelac-institute.org or from TNI at P.O. Box 2439, Weatherford, TX 76086, Telephone: (817) 598-1624.

7:18-1.6 Program Information; Notices; Submittals

(a) Unless otherwise specified, any questions concerning the requirements of this chapter should be directed to the Department's Office of Quality Assurance at (609) 292-3950. Written inquiries can be directed to the following address:

New Jersey Department of Environmental Protection
Office of Quality Assurance
P.O. Box 420, Mail Code 401-02D
Trenton, New Jersey 08625-0420

(b) Unless otherwise specified, any submittals of PT sample results, submittals of documents, notices or other communications required to be made to the Department under this chapter shall be made to the address specified in (a) above. Applications for certification and for renewals and modifications of certifications shall be submitted to the address specified in (a) above.

7:18-1.7 Definitions

The following words and terms, when used in this chapter, shall have the following meanings. If a definition in this section differs from the corresponding definition in any regulation or other document incorporated by reference under N.J.A.C. 7:18-1.5, the definition in the document incorporated by reference shall control.

"Acceptably analyze" means to analyze a sample in a manner that satisfies the requirements of N.J.A.C. 7:18-2.13(j).

"Acclimation" means, for Acute Toxicity Testing, an organism's physiological adjustment to environmental changes including, but not limited to, changes in temperature and salinity.

“Accreditation” means the process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications or standards, thereby accrediting the laboratory. In the context of the National Environmental Laboratory Accreditation Program (NELAP), this process is a voluntary one.

"Accredited" means having the approval conferred upon schools, institutions, or programs where appropriate by a nationally recognized regional accrediting agency or association as determined by either the United States Secretary of Education, State Commissioner of Education, or State Chancellor of Higher Education.

“Accreditation body” means the agency or department designated at the territory, state, or Federal levels as the recognized authority with responsibility for granting TNI accreditation for a specified field of testing.

"ACPL" means Annual Certified Parameter List and is a list that is sent annually to a certified environmental laboratory showing the regulatory programs, analytical techniques, method references and corresponding methods, specific parameters or group thereof for which the laboratory is certified to analyze regulatory samples.

"Acute MCL violation" means any violation of the maximum contaminant level (MCL) for any parameter specified by the state as posing an acute risk to human health including the presence of fecal coliform or E. coli, and nitrate (>10mg/L), nitrite (>one mg/L) or nitrate/nitrite (>10mg/L).

"Acute toxicity" means, for acute toxicity testing, a lethal or adverse sublethal effect to an organism exposed to a toxic substance for no more than 96 hours.

"Acute toxicity testing" means the standardized procedures for determining the quantitative lethal or sublethal effects of a toxic substance on an organism.

"Affiliate" means, with respect to any individual or entity, another individual or entity who has a controlling interest in such individual or entity; in whom such individual or entity has a controlling interest; or who is under common control with such individual or entity.

"Air sampling train” means an air sampling device consisting of an intake nozzle, filters, a series of impingers, valves, sampling pump, vacuum gauge, temperature sensor, and flow sensor.

"Alternate Test Procedure (ATP)" means a procedure that:

1. Is a modification of an approved reference method or a procedure that uses the same determinative technique (for example, the physical and/or chemical process used to determine the identity and concentration of an analyte) and measures the same analyte(s) of interest as the approved reference method.

The use of a different determinative technique to measure the same analyte(s) of interest as an approved reference method is considered a new method; or

2. Is a method not listed as a DSAM for the monitoring of one or more parameters of interest for the Safe Drinking Water Act, New Jersey Pollutant Discharge Elimination System, New Jersey Spill Compensation Act, New Jersey Solid Waste Management Act, Industrial Site Recovery Act, and New Jersey Underground Storage Tanks Program.

"Analytical reagent (AR) grade," "ACS reagent grade," and "reagent grade" mean reagents that conform to the current specifications of the Committee on Analytical Reagents of the American Chemical Society.

"Analyze-Immediately parameter" means a parameter for which analysis must be performed within 15 minutes after the sample is collected. Examples of analyze-immediately parameters include chlorine dioxide, dissolved oxygen with probe, pH, ozone, residual chlorine, sulfite and temperature.

"ANSP - Goulden" means the publication entitled "Daphnia Bioassay Workshop," Dr. Clyde Goulden and Ms. Linda Henry; The Academy of Natural Sciences of Philadelphia, Division of Limnology and Ecology. This reference is a source for daphnid culturing and testing techniques used in N.J.A.C. 7:18-7, Toxicity Testing.

"Applicant" means a laboratory applying to the Department to become a certified environmental laboratory.

"Arochlor" or "Aroclor" means the trade name for a series of commercial polychlorinated biphenyl and terphenyl mixtures, often termed PCBs or polychlorinated biphenyls.

"ASTM D1193-91" means, for Chemical Testing, "Standard Specifications for Reagent Water," D1193-91 (and later revisions) American Society for Testing and Materials.

"ASTM D 4229-84" means "Standard Practice for Conducting Static Acute Toxicity Tests on Waste-waters with Daphnia," D 4229-84, American Society for Testing and Materials. This reference method is a source for daphnid culturing and testing techniques used in N.J.A.C. 7:18-7, Toxicity Testing.

"ASTM E 724-80" means "Standard Practice for Conducting Static Acute Toxicity Tests with Larvae of Four Species of Bivalve Molluscs," E 724-80; American Society for Testing and Materials. This reference method is a source for standardized culturing and testing techniques in N.J.A.C 7:18-7, Toxicity Testing.

"ASTM E 729-80" means "Standard Practice for Conducting Acute Toxicity Tests With Fishes, Macroinvertebrates, and Amphibians," E 729-80, American Society for Testing and Materials. This reference method is a source for standardized culturing and testing techniques in N.J.A.C. 7:18-7, Toxicity Testing.

"ASTM-31" means Annual Book of the American Society for Testing and Materials, Part 31.

"Asymptotic LC_{50}" means, for Acute Toxicity Testing, the toxicant concentration at which the LC_{50}, the lethal concentration at which 50 percent death of the test organisms occurs during an acute toxicity test, becomes a constant for a prolonged exposure time.

"Authorized measurement protocols" for radon/radon progeny-in-air means the DSAMs for Category RA1, radon/radon progeny-in-air, which are the approved methods for use by a certified laboratory when performing radon/radon progeny-in-air analysis. These DSAMs include the "Indoor Radon and Radon Decay Product Measurement Device Protocols," USEPA 402-R-92-004 and the "Interim Protocols for Screening and Follow-up Radon and Radon Decay Product Measurements," USEPA 520/l-86-0l4.

"Authorized proficiency program" or "APP" means the USEPA Radon/Radon Progeny Measurement Proficiency Program, Eastern Environmental Radiation Facility, Montgomery, Alabama 36109, or other program authorized by the Department in writing as being equally stringent. The APP provides the Department with a laboratory's radon/radon progeny results of PT samples. The Department uses the laboratory's results and the expected acceptable limits to partially assess its analytical performance. Pursuant to N.J.A.C. 7:18-2.13, successful analysis of radon/radon progeny PT samples is necessary for obtaining and maintaining radon/radon progeny-in-air certification.

"Authorized representative" means a person other than an employee of a certified laboratory from which a certified laboratory accepts drinking water well samples and also accepts responsibility for such samples in accordance with the requirements of N.J.A.C. 7:18-9.1(c).

"Bioassay" means, for Acute Toxicity Testing, a determination of the concentration or dose of a given material necessary to cause a specific response in a test organism under stated conditions. Bioassay refers to an acute toxicity test.

"Biomonitoring" means, for Acute Toxicity Testing, all test methods that utilize a biological system, or any of its parts, to assess the presence or effects of one or more pollutants and/or environmental factors, either alone or in combination.

"Bureau" means one of the management units of the Department.

"Category" means one of the assigned designations that includes groups of parameters, their techniques of analysis, method references, and corresponding approved methods, for which certification is offered.

"CERCLA (CLP) Program," or "Contract Laboratory Program" means the USEPA contract program for the procurement of analytical data in support of its CERCLA program and the six Categories for which a laboratory may obtain certification from the Department for its CERCLA programs.

"Certification" means a laboratory's status as a certified environmental laboratory, or the document issued by the Department pursuant to N.J.A.C. 7:18-2.6, evidencing that status. "Certification of Radon Testers and Mitigators" means N.J.A.C. 7:28-27.

"Certification year" means a one-year period beginning on July 1 of one year and ending on June 30 of the following year. A particular certification year is identified by the calendar year in which it ends. For example, certification year 1996 is the certification year ending on June 30, 1996.

"Certified environmental laboratory" means any laboratory, facility, consulting firm, government or private agency, business entity or other person that the Department has authorized pursuant to this chapter to perform analysis in accordance with the procedures of a given analytical method using a particular technique as set forth in a certain methods reference document, and to report the results from the analysis of environmental samples in compliance with a Departmental regulatory program.

"Certified radon environmental laboratory" means a radiochemical environmental laboratory that the Department has certified pursuant to this chapter to analyze samples for the presence of radon and/or radon progeny-in-air in a facility separate from the location in which the sample was taken, and that uses stationary measurement detection equipment.

"Certified radon measurement business" means a commercial business enterprise certified pursuant to N.J.A.C. 7:28-27 to sell devices and/or test for radon/radon progeny-in-air.

"Certified radon measurement specialist" means an individual certified pursuant to N.J.A.C. 7:28-27 to perform and/or evaluate radon/radon progeny-in-air measurements for a certified radon measurement business.

"Certified radon measurement technician" means an individual certified pursuant to N.J.A.C. 7:28-27 to perform radon/radon progeny-in-air measurement activities.

"Certified thermometer" means a thermometer that has documentation from the manufacturer showing that it has been calibrated against a National Institute of Standards and Technology (NIST), formerly National Bureau of Standards (NBS), thermometer for the temperature ranges employed by the environmental laboratory and the correction factors from that comparison.

"Chemical testing" means the chemical analysis and physical testing of environmental samples for inorganic and organic parameters and physical properties.

"Chronic toxicity" means death or other adverse impacts that affect the growth, survival, or reproductive success of an organism or its progeny after a relatively long exposure period to toxic substances. Chronic toxicity is measured using intermediate-term or long-term chronic toxicity tests.

"Class 'A' glassware" means glassware satisfying the applicable requirements for Class "A" glassware established by the National Institute of Standards and Technology (formerly the National Bureau of Standards).

“Clean Air Program” means the Department’s program implementing the certification requirements for laboratories that analyze air samples.

"Client" means the person who requests an analysis from a laboratory.

"Cold-water fishes" means, for Acute Toxicity Testing, those species of fish living and breeding in aquatic ecosystems with a maximum water temperature between 10 degrees Celsius and 16 degrees Celsius.

"Collector" means the person who collects a sample.

"Compliance analysis" means the analysis of a sample that is required by law, or by departmental regulation or order.

"Composite sample" means a sample composed of several discrete samples combined in a known proportion. For NJPDES wastewater monitoring, a composite sample is a sample composed of several discrete samples collected at equal time intervals, or proportionally to the flow rate of the discharge.

"Confluent growth" means a bacterial growth that covers the entire filtration area of the filter with no discrete colonies when performing microbiological analysis by the membrane-filter techniques listed in Categories DW01, NPW01, and SCM01. When confluent growth occurs, another sample must be obtained and analyzed using higher dilutions for the membrane-filter technique or using another approved technique.

"Contaminant or grouped-contaminants" means a specific analyte or group of analytes which are included in the general term "parameter" for the purposes of this chapter.

"Control" means, for Acute Toxicity Testing, the group of test organisms in a chamber under test conditions that are exposed to dilution water only and/or the natural water to which they are normally exposed.

"Controlling interest" means any of the following:

1. The direct or indirect beneficial ownership, by the person asserted to have a controlling interest and any of such person's affiliates, of at least 50 percent of the voting stock or other equity interest in a person;

2. The holding of any direct or indirect beneficial interest in at least 50 percent of the income or profits of a person, by the person asserted to have a controlling interest; or

3. The existence of any other relationship between the person asserted to have a controlling interest and the person controlled, which relationship in fact constitutes control over the affairs of the person controlled.

"Criteria - 1986" means "Quality Criteria for Water 1986," USEPA, Office of Water Regulations and Standards, Washington, D.C., USEPA 440/5-86-001. This reference was used to establish purity guidelines for test organism culture water in N.J.A.C. 7:18-7, Toxicity Testing.

"Custodian" means an individual, designated by the laboratory manager, trained in the proper procedures to receive samples into the environmental laboratory.

"Definitive test" means, for Acute Toxicity Testing, a short-term toxicity test used to measure the acute toxicity of effluents or materials.

"Department" means the New Jersey Department of Environmental Protection.

"Department validated methods" means analytical methods developed and validated for analysis of specified matrices by the Department or by Department sponsored research.

"Detection limit" (DL) or "instrument detection limit" (IDL) means the lowest concentration above background noise level that an instrument can detect reliably.

"Dilution factor" (DF) means, for Chemical Testing, a multiplication factor applied to a calculated sample result to compensate for sample dilution. The dilution factor is determined as follows:

“DF = Diluted sample volume/Original sample volume

"Dilution water" means, for Acute Toxicity Testing, unpolluted water of desired quality to be used in preparing the different test concentrations of the effluent and controls. For example, dilution water is usually collected from a point that is as close as possible to, but upstream or outside of, the effluent's zone of impact.

"Discharge" means an intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying, or dumping of a pollutant into the waters of the State, onto land or into wells from which the pollutant might flow or drain into such waters, or into waters, or onto lands outside the jurisdiction of the State which pollutant enters the waters of the State, and shall include the release of any pollutant into a municipal treatment works.

"Drinking Water Program" means the Department's program implementing the Safe Drinking Water Act, N.J.S.A. 58:12A-1 et seq., and the Private Well Testing Act, N.J.S.A. 58:12A-26 et seq.

"Drinking Water Sample" means a regulatory sample analyzed to determine compliance with the Drinking Water Program.

"DSAM" means Department Sanctioned Analytical Method. DSAMs are methods that laboratories may be certified to perform if they qualify under the requirements of this chapter. Mandatory methods, published or referenced in the Code of Federal Regulations, become DSAMs on their stated effective date. New or revised CERCLA CLP methods become DSAMs when new or revised CLP methods are included in Invitation for Bid documents published in the Commerce Business Daily. DSMs that are needed for analysis of Department program regulatory samples, are designated as DSAMs by procedures described at N.J.A.C. 7:18-2.21.

"DSM" means Department Selected Method. DSMs are methods selected for designation as DSAMs. DSMs include methods that the Department has determined are necessary for the analysis of Program regulatory samples, but are not mandatory methods published or referenced in the Code of Federal Regulations and are not new CERCLA CLP methods published in Invitation for Bid documents published in the Commerce Business Daily. DSMs may include:

1. Published USEPA discretionary methods;

2. Methods published by professional organizations with recognized expertise in method development such as ASTM, APHA, and USGS; and

3. Departmental validated methods.

"Dwelling Unit" means any building or portion of a building, permanent or temporary in nature, used or to be used as a residence either seasonally or throughout the year.

"EC_{50}" means, for Acute Toxicity Testing, the statistical estimate of the toxicant concentration that has a specified adverse effect (such as immobilization, change in respiration rate, or loss of equilibrium) on 50 percent of test organisms after a specific time of exposure.

"EDL" means an electrodeless discharge lamp used in atomic absorption spectroscopy.

"Effective Concentration (EC)" means, for Acute Toxicity Testing, the statistical estimate of the toxicant concentration that has a specified adverse effect (such as immobilization, change in respiration rate, or loss of equilibrium) in a given time.

Effluent" means the outflow from a point source.

"EPA Acute Methods #013-1985" means, for Acute Toxicity Testing, "Methods for Measuring The Acute Toxicity of Effluents to Freshwater and Marine Organisms," 3rd ed., USEPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268, USEPA-600-4-85-013.

"EPA Acute Methods #027F-1993" means, for Acute Toxicity Testing, "Methods for Measuring the Acute Toxicity of Effluents for Freshwater and Marine Organisms," 4th ed, USEPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268, EPA-600/4-90/027F.

"EPA Microbiological Methods" means, for microbiological testing, "Microbiological Methods for Monitoring the Environment," USEPA-600/8-78-017.

"Exposure time" means, for Acute Toxicity Testing, the time of exposure of test organisms to a test solution for parameters in the Acute Toxicity Testing Category.

"Field analyses" means those measurements taken directly at the site being sampled using portable meters or other portable instrumentation.

"Field of accreditation" – means TNI's approach to accrediting laboratories by matrix, technology, and analyte. Laboratories requesting accreditation for a matrix-technology-analyte combination or for an up-dated/improved method are required to submit only that portion of the accreditation process not previously addressed.

"Flow-through bioassay" means, for Acute Toxicity Testing, a test in which the solution is replaced continuously in the test chambers for the test duration.

"GC" means gas chromatography.

"Grab sample" means an individual sample collected over a time period of less than 15 minutes.

"Guidelines Establishing Test Procedures for the Analysis of Pollutants" means the regulations promulgated by the USEPA at 40 CFR 136, together with all amendments and supplements.

"HASL 1973" means "HASL, Procedure Manual," Edited by John H. Harley. HASL 300, ERDA Health and Safety Laboratory, New York, NY, 1973. Pursuant to N.J.A.C. 7:18-6, a certified laboratory performing analysis of the Department's additional radiochemical and radionuclide parameters not listed in the Safe Drinking Water Act must reference HASL 1973.

"48-Hour Rapid Gross Alpha Test" or short term 48 Hour Gross Alpha Test means a test performed in accordance with this Chapter, within 48 hours from sample collection in order to measure the presence of alpha emitting radionuclides in the sample, including the short-lived alpha emitters such as radium-224.

"Hazardous Waste Management System: General" means the regulations promulgated by the USEPA at 40 CFR 260, together with all amendments and supplements.

"HYICP," or "Hydride Generation Inductively Coupled Plasma - Atomic Emission Spectroscopy," is an inductively coupled plasma technique employing sodium borohydride ($NaBH_4$) and iodine to produce volatile hydrides of antimony, arsenic, and selenium for low-concentration aqueous samples.

"ICP/MS" means Inductively Coupled Plasma/Mass Spectrometry.

"Identification and Listing of Hazardous Waste" means the regulations promulgated by the USEPA at 40 CFR 261, together with all amendments and supplements.

"Incipient LC_{50}" means, for Acute Toxicity Testing, "Asymptotic LC_{50}".

"Indicator parameter" is a parameter that is identified in a proficiency test and is used to evaluate the overall analytical performance of a laboratory on that specific method. Pursuant to N.J.A.C. 7:18-2.13, the Department uses a laboratory's performance on analyzing an indicator parameter to determine the laboratory's certification status on all parameters covered by that analytical method.

"Impinger" means a vessel used for air sampling in which air is drawn through a solution that captures the analyte and allows the remaining air to escape.

"Juvenile" means, for Acute Toxicity Testing, the fishes that are greater than 20 days but less than or equal to 60 days post hatch.

"Laboratory" means any individual or other entity, including without limitation, corporations, associations, partnerships, joint ventures, and the United States, any state, any foreign country or government, and any political subdivision or agency thereof, that performs analyses of samples.

"Laboratory grade water" means a supply of water meeting or exceeding the specifications given in N.J.A.C. 7:18-7.4(b), to be used for the holding, spawning, and rearing of aquatic organisms used in acute toxicity testing.

"Laboratory pure water" means distilled, deionized, or charcoal treated water that meets the requirements of:

1. N.J.A.C. 7:18-4.5(e), for microbiological testing;

2. N.J.A.C. 7:18-6.2, for radiochemical testing; or

3. N.J.A.C. 7:18-7.4, for acute toxicity testing.

"Larvae" means, for Acute Toxicity Testing, the fishes that are less than or equal to 20 days post hatch.

"Lethal concentration (LC)" means, for Acute Toxicity Testing, the statistical estimate of the toxicant concentration producing death of the test organisms. LC is usually defined as the median (50 percent) lethal concentration, LC_{50}, i.e. concentration killing 50 percent of tested organisms at a specific time of exposure, for example 96-hour LC_{50}.

"LC_{50}" means, for Acute Toxicity Testing, the lethal concentration at which 50 percent of tested organisms are killed over a specific time of exposure.

"LC Method" means Lucas Cell Method, USEPA/600/2-87/082, March 1989, a DSAM for the analysis of radon in drinking water samples.

"Local Health Authority" means a county, regional or municipal health agency that serves as the lead point of contact with the Department on environmental issues. This agency would ordinarily be the local health agency certified pursuant to the County Environmental Health Act, N.J.S.A. 26:3A2-21 et seq. In those counties that do not have a certified CEHA health agency, the local health authority is the agency that serves as the lead for administering the Local Information Networks and Communication System (LINCS) as designated by the Department of Health and Senior Services.

"LS Method" means Liquid Scintillation Method, USEPA/600/ 287/082, March 1989, a DSAM for the analysis of radon in drinking water samples.

"Macro analysis" means the determination of parameters at concentrations in the high part per million or percent range.

"Manual" means "Manual for the Certification of Laboratories Analyzing Drinking Water, Criteria and Procedures Quality Assurance," USEPA/570/9-90/008, USEPA, Office of Water (WH-550D), Washington, DC 20460, as updated or supplemented. This reference is the federal training and standard operating procedures manual for federal, state, and local certification officers of drinking water laboratories for microbiological, chemical, and radiochemical testing.

"Maximum contaminant level (MCL)" means the maximum permissible level of a contaminant allowed in drinking water under the National Primary Drinking Water Regulations.

"Membrane filtration (MF) method" means a method for determining the bacterial count in a water sample. In this method, a known volume of water is filtered through a membrane filter of optimum pore size for full bacterial retention. The filter is incubated in contact with culture medium to provide nutrients for bacterial growth. After incubation at a prescribed time and temperature, the cultures are examined for bacterial colonies that are counted and recorded per 100 mL of water sample.

"Method detection limit" (MDL) means the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte according to the Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR 136, Appendix B.

"Method reference" means the name, abbreviation or acronym (e.g. USEPA, ASTM, USGS) of the organization that has developed an approved method or of the publication containing an approved method. The method reference, together with the method number, specifically identifies a method.

"Methods for Measuring Acute Toxicity - EPA" means "Methods for Measuring Acute Toxicity of Effluents to Aquatic Organisms," USEPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, EPA-600/4-78-012.

"Micro analysis" means the determination of trace quantities of parameters at concentrations in the low and sub part per million range.

"Modified static toxicity test" means, for Acute Toxicity Testing, the "Renewal Toxicity Test." "Most probable number (MPN)" means a quantitative designation of microbial population which is determined by a statistical method. In this method, a multiple dilution tube technique is used with a standard culture medium. The tubes are incubated and observed for gas production. Results of these tubes are translated by mathematical probability tables into population numbers.

"MS" means mass spectrometry.

"mv" means millivolt or 1/1000 of a volt.

“National Environmental Field Activities Program” or “NEFAP” means the overall National Environmental Field Activities Program that is part of the TNI Standards.

“National Environmental Laboratory Accreditation Program” or “NELAP” means the overall National Environmental Laboratory Accreditation Program that uses the TNI Standards to grant laboratories national accreditation status.

"National Primary Drinking Water Regulations" means the regulations promulgated by the USEPA at 40 CFR 141, together with all amendments and supplements.

"National Secondary Drinking Water Regulations" means the regulations promulgated by the USEPA at 40 CFR 143, together with all amendments and supplements.

"New Jersey Pollutant Discharge Elimination System rules" or "NJPDES rules" means the rules promulgated by the Department at N.J.A.C. 7:l4A, together with all amendments and supplements. The NJPDES rules govern the Department's system for issuing, modifying, suspending, revoking and reissuing, terminating, monitoring, and enforcing discharge permits pursuant to the New Jersey Water Pollution Control Act.

"New Jersey Safe Drinking Water Act Regulations" means the regulations promulgated by the Department at N.J.A.C. 7:10, together with all amendments and supplements. The rules implement the New Jersey Safe Drinking Water Act, N.J.A.C. 58:12A-1 et seq.

"NIST" means the National Institute of Standards and Technology, formerly known as the National Bureau of Standards.

"NJWPCA" or "New Jersey Water Pollution Control Act" means N.J.S.A. 58:10A-1 et seq., together with all amendments and supplements.

"nm" means nanometer, one lionth of a millimeter, in the Metric System.

"N.M.A.T. (no measurable acute toxicity) definitive toxicity test" means, for Acute Toxicity Testing, a short-term toxicity test designed to measure compliance with NJPDES permit limitations of "no measurable acute toxicity."

"N.O.A.E.C. (no observed adverse effect concentration) definitive toxicity test" means, for acute toxicity testing, a short-term toxicity test designed to measure compliance with NJPDES permit limitations of "no observed adverse effect concentration."

"Non-transient non-community water system" means a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year.

"Office of Quality Assurance" (OQA) means the office in the New Jersey Department of Environmental Protection that administers the Department Quality Assurance Program, the Environmental Laboratory Certification Program, and the State Contract Laboratory Program which includes the Analytical Services Contracts and Memoranda of Agreements for Analytical Services.

"On-site analyses" means the analysis of samples collected at a facility or a site of environmental concern, performed at that facility or environmental site.

"Parameter" means a general term that includes, but is not limited to terms such as contaminant, constituent, substance, metal, organic chemical, and characteristics that are used to designate an analyte, group of analytes, attribute, or physical property for which a certified environmental laboratory may be approved to perform analysis of regulatory samples and report results.

"Permit" means a NJPDES permit issued pursuant to the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-6.

"Person" means any individual or other entity, including without limitation, corporations, associations, partnerships, joint ventures, and the United States, any state, any foreign country or government, and any political subdivision or agency thereof.

"pH" means a numerical expression of the hydrogen ion concentration (acidity) of aqueous matrices. pH values range from 0 (high acidity-low alkalinity) to 7 (neutral), to 14 (low acidity-high alkalinity).

"Piper-1982" means, for Acute Toxicity Testing, "Fish Hatchery Management," by Piper et al., 1982, U.S. Fish and Wildlife Publication.

"Point of use treatment device" or "Point of delivery treatment device" means a water treatment device applied to a single tap for the purpose of reducing contaminants in drinking water at that one tap.

"Point source" means any discernible, confined, and discrete conveyance from a mobile or stationary source, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete issue, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, from which pollutants are or may be discharged.

"Pollutant" means any dredge spoil, solid waste, incinerator residue, filter backwash, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, thermal waste, wrecked or discarded equipment, and construction waste or runoff or other residue discharged to the land, groundwaters or surface waters of the state.

"Primary standard" means a very pure reagent of defined purity used as a reference for standardizing other reagent solutions.

"Private well" means a potable water well that serves a dwelling unit and is located on the same real property as the dwelling unit.

"Private Well Testing Act" or "PWTA" means P.L. 2001, 0.40; N.J.S.A. 58:12A-26 et seq.

“Proficiency test sample” or “PT sample” means a sample containing a known concentration of one or more specific parameters, used to evaluate the analytical performance of a laboratory.

"Proficiency test study" of “PT Study” means an organized program in which laboratories participate in the analysis of PT sample aliquots from homogeneous sample batches. The PT samples contain one or more parameters monitored under a regulatory program, for example, the Drinking Water Program. Data from the study are analyzed statistically against a given set of acceptance criteria, to evaluate whether a laboratory’s PT data are acceptable or unacceptable.

"Public community water system" means a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

"Public non-community water system" means a public water system that is not a community water system.

"Quality Assurance" or "QA" means the integrated system of operations and measurements performed to assure that data meets defined standards of quality with a stated level of confidence.

"Quality Control" or "QC" means the practice of standardized operations or measurements which determine one or more aspects of data quality. An example is the evaluation of precision and accuracy data of an analytical method by statistical methods for the purpose of establishing control limits within which future precision and accuracy data must fall.

"Quality control check sample" means an uncontaminated sample matrix spiked with known amounts of analytes from a source independent from the calibration standards. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.

"Radon" means the radioactive noble gas radon-222.

"Radon Act" means N.J.S.A. 26:2D-70 et seq.

"Radon progeny-in-air" means the short-lived radionuclides formed as a result of the decay of radon-222. The short-lived radon progeny consist of polonium-218, lead-214, bismuth-214 and polonium-214.

"Radon/Radon Progeny-in-Air Program" means the Department's program implementing the portion of the Radiation Protection Act governing radon and radon progeny, N.J.S.A. 26:2D-70 et seq.

"Range-finding toxicity test" means, for Acute Toxicity Testing, a short-term (usually 24 hours), small-scale test to determine the approximate concentration range to be covered in full-scale definitive testing. This is especially useful with effluents or materials of unknown toxicity.

"Raw data" means the data generated during the sample preparation and analysis. The data includes analyst notebook entries, bench sheets, standards preparation, instrument calibration, method QC, strip chart graphs, computer printouts, and integrator printouts.

"Reagent water" means water used for chemical testing that meets the specifications of Type I (or better) and Type II (or better) reagent waters as defined in the current version of ASTM D1193. Type I reagent water is required for inorganics analysis. Type II reagent water is required for organics analysis and sampling equipment decontamination.

"Reciprocal" means the mutual agreement of two or more states to accept each other's findings regarding the ability of environmental testing laboratories in meeting the TNI Standards."

"Recognition" means the determination that an accreditation body meets the requirements of the NELAP and is authorized to grant NELAP accreditation to laboratories.

"Record" means all information and data recorded and/or stored on paper, microfilm/microfiche or computer systems.

"Regulatory program" means any of the statutes listed in N.J.A.C. 7:18-1.1(c), any regulations or orders issued pursuant to those statutes, or the Contract Laboratory Program.

"Regulatory purposes" means for the purpose of determining compliance with a regulatory program.

"Regulatory sample" means either of the following:

1. A sample taken and/or analyzed to comply with a regulatory program; or

2. A proficiency test (PT) sample.

"Renewal toxicity test" means, for Acute Toxicity Testing, a static test with periodic exposure (at least once every 24 hrs.) of the test organisms to a fresh test solution of the same concentration. This is accomplished either by transferring the test organisms or replacing the test solution.

"Replicate sample" means a sample prepared by dividing a homogeneous sample into separate parts so that each part is also homogeneous and representative of the original sample.

"Response" means, for Acute Toxicity Testing, the observed biological effect of the material tested. In acute toxicity tests, the observed effect is usually death.

"Safe Drinking Water Act" or "NJSDWA" means N.J.S.A. 58:12A-1 et seq.

"Salinity" means, for Acute Toxicity Testing, the total amount of dissolved salts in sea water expressed in parts per thousand (ppt) by weight when all the carbonate has been converted to oxide, the bromide and iodide have been replaced with chloride, and all organic matter has been completely oxidized.

"Sample handling and preservation" means those sample handling and preservation techniques listed in N.J.A.C. 7:18-9. These techniques comprise the Department's minimum performance requirements for handling and preserving a valid sample for subsequent analysis by a certified environmental laboratory for regulatory purposes.

"Sampling point" means a particular site whose location may be specified in a permit, or otherwise, and from which samples are to be collected for testing and evaluation.

"SM14" or "Standard Methods, 14th Edition" means "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 14th Edition 1975.

"SM15" or "Standard Methods, 15th Edition" means "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 15th Edition 1980.

"SM16" or "Standard Methods, 16th Edition" means "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 16th Edition 1985.

"SM17" or "Standard Methods, 17th Edition" means "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 17th Edition 1989.

"SM18" or "Standard Methods, 18th Edition" means "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 18th Edition 1992.

"SOC" means a synthetic organic chemical listed in the National Primary Drinking Water Regulations. An SOC is a non-volatile organic compound for which maximum contaminant levels (MCLs) or maximum contaminant level goals (MCLGs) have been established.

"Solid/Hazardous Waste Programs" means the Department's programs implementing the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., the Industrial Site Recovery Act, N.J.S.A. 13:1K-6 et seq., and the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. "Solid/Hazardous Waste sample" means a regulatory sample analyzed to determine compliance with one or more of the Solid/Hazardous Waste programs.

"SOP manual" means standard operating procedure manual. This manual includes step-by-step instructions for all procedures, operations, analyses, and actions whose mechanics are thoroughly prescribed and commonly accepted as the usual method for performing routine or repetitive tasks.

"State Primary Drinking Water Regulations" means those regulations promulgated as N.J.A.C. 7:10-5.

"State Secondary Drinking Water Regulations" means those regulations promulgated as N.J.A.C. 7:10-7.

"Static-Toxicity Test" means, for Acute Toxicity Testing, a test in which solutions and organisms are placed in chambers for the duration of the test without any exchange of the test solutions.

"Stationary source audit sample" or "SSAS" means a blind sample, the composition of which is unknown to the stationary source tester and laboratory, and that is provided to evaluate whether, during a particular test event, that stationary source tester and/or laboratory can produce measurement results within specified acceptance criteria. Audit samples are not analyzed on a regular schedule, but they are analyzed only during the particular event (for example, a compliance test) that is being audited. Audit samples are analyzed, or collected and analyzed, as part of the batch of field test samples using the same personnel, procedures, and materials.

"Subsample" means a portion of a large volume homogenized sample.

"Subsequent to graduation" means the time after receipt of a specified degree.

"SW-846" means the USEPA's Test Methods for Evaluating Solid Waste - Physical and Chemical Methods, Third Edition 1986, as amended or supplemented.

"Target Compound" means any parameter for which quality control data are listed in the method.

"Technique" means the type of instrumental or manual procedure used to perform an analysis. For example, the potentiometric ion selective electrode determination of fluoride is one of four techniques used for the determination of fluoride in drinking water. There are three method references approved by USEPA that use this technique.

"Temporary approval" means either of the following:

1. A temporary approval for a laboratory to continue analyzing regulatory samples pending an on-site audit pursuant to N.J.A.C. 7:18-2.6(a)6; or

2. A temporary approval for a laboratory to continue analyzing regulatory samples for one or more categories in the solid/hazardous waste programs, pursuant to N.J.A.C. 7:18-2.6(c).

"The National Environmental Laboratory Accreditation Conference (NELAC) Institute" or "TNI" means a voluntary organization of state and Federal environmental officials and members purposed primarily to establish mutually acceptable standards for accrediting environmental laboratories and field activity facilities.

"TNI recognition" means the determination that an accreditation body meets the requirements of the TNI Standards and is authorized to grant TNI accreditation to laboratories and field activity facilities performing environmental measurements.

"TNI Standards" means the plan of procedures developed by TNI for consistently evaluating and documenting the ability of laboratories and field activity facilities performing environmental measurements, to meet nationally defined standards. See N.J.A.C. 7:18-1.5.

"Total length" means, for Acute Toxicity Testing, the straight-line measurement from the tip of the snout of a fish to the extreme tip of the caudal fin.

"Toxicity Test" means, for Acute Toxicity Testing, a procedure in which the responses of aquatic organisms are used to detect or measure the presence or effect of one or more toxic substances or wastes, alone or in combination.

"Transient non-community water system" means a non-community water system that does not regularly serve at least 25 of the same persons over 6 months per year.

"Transport Water" means, for Acute Toxicity Testing, the fresh or salt water used to transport test organisms from an outside supplier's facility to the certified environmental laboratory; usually it is the water used by the supplier for culturing test organisms.

"Trip blanks" means a set of sample containers filled with analyte-free water that originates in the environmental laboratory, travels to the field site and remains unopened. This blank checks for potential contamination sources in sample container preparation, method blank water, and sample transport.

"USEPA" or "EPA" means the United States Environmental Protection Agency.

"USEPA-1987" means, for Acute Toxicity Testing, "Guidelines for the Culture of Fathead Minnows Pimephales Promelas for Use In Toxicity Tests," USEPA, Environmental Research Laboratory, Duluth, MN, USEPA/600/3-87/001, January, 1987.

"USGS-83" means "Methods for the Determination of Organic Substances in Water and Fluvial Sediments," Book 5, 1983.

"USGS-76" means Fishman and Brown, "Selected Methods of the U.S. Geological Survey of Analysis of Wastewater," Open-file Report 76-177 (1976).

"VOCs" means volatile organic chemicals as listed in the National Primary Drinking Water Regulations. These are a group of purgeable organic compounds for which maximum contaminant levels (MCLs) or maximum contaminant level goals (MCLGs) have been established.

"Volatile organics" means those organic compounds that can be determined quantitatively by methods utilizing the purge and trap technique. VOCs are a subset of volatile organics.

"Volume Percent" means, for Acute Toxicity Testing, equal to 100 x (volume of effluent)/(volume of effluent + volume of dilution water).

"Warm-water Fishes" means, for Acute Toxicity Testing, those species living and breeding in aquatic ecosystems with a maximum water temperature range of between 13 degrees Celsius and 27 degrees Celsius.

"Wastewater sample" means a regulatory sample analyzed to determine compliance with the Water Pollution Program.

"Water Pollution Program" means the Department's program implementing the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.

"Water purveyor" means a person who owns or operates a public water system (as that term is defined in N.J.A.C. 7:10-1.3).

"Waters of the State" means the Atlantic Ocean and its estuaries, all springs, streams, and bodies of surface or ground water, whether natural or artificial, within the boundaries of this State or subject to its jurisdiction.

"Weis - 1979" means, for Acute Toxicity Testing, "Establishment of a Statewide List of Bioassay Organisms Pursuant to the New Jersey Surface Water Quality Standards," Judith S. Weis, Edmund Zimmerer, John Galandak, and Allen Marchinsin; Department of Zoology and Physiology, Rutgers, The State University; Revised March, 1979.

"Wide spectrum light" means light that approximates natural sunlight.

"Working level (WL)" means the concentration of short-lived radon decay products that will result in 130,000 million electron volts of potential alpha-particle energy per liter of air. Working level is a measure of radon decay product concentration in air.

"Year Class" means, for Acute Toxicity Testing, fish that originate from the same annual brood or spawning.

7:18-1.8 Severability

If any portion of this chapter is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this chapter shall not be affected by that adjudication.

7:18-1.9 Signatories

(a) In each application for an initial certification, renewal certification or modification of a certification, the applicant shall include the following certification, signed by the individual specified in (b) below:

1. "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant civil and criminal penalties, including the possibility of a fine or imprisonment or both, for submitting false, inaccurate, or incomplete information."

(b) The following individual shall sign the certification required under (a) above:

1. If the applicant is a corporation, a principal executive officer of at least the level of vice president;

2. If the applicant is a partnership, a general partner;

3. If the applicant is a sole proprietorship, by the proprietor

4. If the applicant is a municipal, state, federal or other public agency or instrumentality, by the principal executive officer or his or her designee.

(c) Upon written notice from the Department, monitoring results may be submitted to the Department electronically. Prior to submitting data electronically, the laboratory shall register with the Department by accessing the Department's electronic website portal, located at www.njdeponline.com to obtain a Department issued personal identification number (PIN) by printing, completing and signing the authorization form provided at the website and mailing to the Department at the address specified in N.J.A.C. 7:18-1.6(a).

(d) When submitting test results electronically, the laboratory shall:

1. Use the PIN as an electronic signature to certify that all sampling, analysis, and quality control procedures were conducted in accordance with N.J.A.C. 7:18.

2. Use only the electronic data deliverable formats supplied to the laboratory by the Department.

SUBCHAPTER 2 PROGRAM PROCEDURES AND REQUIREMENTS

7:18-2.1 Scope

(a) This subchapter establishes the following:

1. The procedure for becoming a certified environmental laboratory;

2. Requirements that a laboratory must meet to become a certified environmental laboratory;

3. The categories of analysis for which certification is available;

4. The procedure for a certified environmental laboratory to renew or modify its certification;

5. Procedures for cancellation, suspension, and revocation of certification;

6. The procedures to apply for approval of alternate test procedures; and

7. Fees for certification.

7:18-2.2 General prohibitions

(a) No laboratory other than a certified environmental laboratory shall analyze samples for the purpose of establishing compliance with any regulatory program.

(b) A certified environmental laboratory shall use only the methods listed on its Annual Certified Parameter List when analyzing samples for the purpose of establishing compliance with any regulatory program.

(c) Only a certified environmental laboratory may use the name "certified environmental laboratory" or any other name that is reasonably likely to lead the public to believe that a laboratory or other person is a certified environmental laboratory. Any laboratory or other person who is not a certified environmental laboratory shall not make an oral or written statement intended to mislead the public into believing that the laboratory or other person is a certified environmental laboratory.

7:18-2.3 Overview of the certification process

(a) A laboratory is eligible to become a certified environmental laboratory only if it completes the application requirements at N.J.A.C. 7:18-2.5, and demonstrates through the process set forth within this subchapter that it complies with the requirements in N.J.A.C. 7:18-2.6(a).

(b) If the Department determines that an applicant satisfies the requirements of (a) above, the Department shall issue the applicant a certificate and an Annual Certified Parameter List (ACLP) showing the parameters, techniques, method references, and corresponding methods for which the applicant is certified.

(c) The Department's annual certification period begins on July 1 of each year, and ends on the following June 30. A certification and an Annual Certified Parameter List expire at the end of the annual certification period for which they are issued, unless they are renewed in accordance with N.J.A.C. 7:18-2.7. The Annual Certified Parameter List shall indicate the certification period for which it is valid.

7:18-2.4 Categories for certification

(a) An applicant shall apply for certification to perform methods for use in one or more of the following regulatory programs:

1. Drinking Water Program, including testing and/or sampling conducted for conformance with the PWTA;
2. Water Pollution Program;
3. Radon/Radon Progeny-in-Air Program;
4. Solid/Hazardous Waste Programs;
5. CERCLA (CLP) Program; and
6. Clean Air Program

(b) An applicant shall apply for certification to perform sample analysis and to report results for one or more parameters within one or more categories listed in (c) through (h) below.

(c) The parameters for which a laboratory may be certified to perform sample analysis in the drinking water matrix are organized within the following categories:

1. Category DW01: Microbiology;
2. Category DW02: Parasitology and Molecular Microbiology;
3. Category DW03: Inorganic Parameters;
4. Category DW04: Analyze-Immediately and Continuous Monitoring;
5. Category DW05: Asbestos Analysis;
6. Category DW06: Metals;
7. Category DW07: Metals – ICP, ICP/MS and DCP;
8. Category DW08: Organic Parameters - Chromatography;
9. Category DW09: Organic Parameters – Chromatography/MS;
10. Category DW10: Radiochemistry – Radioactivity and Radionuclides;
11. Category DW11: Radon in Drinking Water;
12. Category DW12: Drinking Water Sample Collection; and
13. Category DW13: Drinking Water – Laboratory Developed and/or Non-Standard Methods.

(d) The parameters for which a laboratory may be certified to perform sample analysis in the non-potable water matrix are organized within the following categories:

1. Category NPW01: Microbiology;
2. Category NPW02: Parasitology and Molecular Microbiology;
3. Category NPW03: Inorganic Parameters;
4. Category NPW04: Analyze-Immediately and Continuous Monitoring;
5. Category NPW05: Asbestos Analysis;
6. Category NPW06: Metals – NPW Preparation Methods;
7. Category NPW07: Metals;
8. Category NPW08: Metals – ICP, ICP/MS and DCP;
9. Category NPW09: Organics – NPW Preparation and Screening;
10. Category NPW10: Organic Parameters - Chromatography;
11. Category NPW11: Organic Parameters – Chromatography/MS;
12. Category NPW12: Toxicity Testing;
13. Category NPW13: Radiochemistry – Radioactivity and Radionuclides;
14. Category NPW14: Radon in Non-Potable Water;
15. Category NPW15: Non-Potable Water Sample Collection; and
16. Category NPW16: NPW – Laboratory Developed and/or Non-Standard Methods.

(e) The parameters for which a laboratory may be certified to perform sample analysis in the biological tissue matrix are organized within the following categories:

1. Category BT01: Inorganic Parameters;
2. Category BT02: Metals – BT Preparation Methods;
3. Category BT03: Metals;
4. Category BT04: Metals – ICP, ICP/MS, and DCP;
5. Category BT05: Organics – BT Preparation Methods;

6. Category BT06: Organic Parameters - Chromatography;

7. Category BT07: Organic Parameters – Chromatography/MS; and

8. Category BT08: BT – Laboratory Developed and/or Non-Standard Methods.

(f) The parameters for which a laboratory may be certified to perform sample analysis in the solid and chemical materials matrix are organized within the following categories:

1. Category SCM01: Microbiology;

2. Category SCM02: Characteristics of Hazardous Waste and Physical Analyses;

3. Category SCM03: Inorganic Parameters and Preparation;

4. Category SCM04: Asbestos Analysis;

5. Category SCM05: Metals – SCM Preparation Methods;

6. Category SCM06: Metals;

7. Category SCM07: Metals – ICP, ICP/MS and DCP;

8. Category SCM08: Organics – SCM Preparation and Screening Methods;

9. Category SCM09: Organic Parameters - Chromatography;

10. Category SCM10: Organic Parameters – Chromatography/MS;

11. Category SCM11: Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans;

12. Category SCM12: Radiochemistry – Radioactivity and Radionuclides;

13. Category SCM13: SCM Sample Collection; and

14. Category SCM14: SCM – Laboratory Developed and/or Non-Standard Methods.

(g) The parameters for which a laboratory may be certified to perform sample analysis and to report results for purposes of determining compliance with the CERCLA (CLP) Program are organized within the following categories:

1. Category CLP01: NPW – Multi-Concentration Inorganics;

2. Category CLP02: NPW – Multi-Concentration Organics;

3. Category CLP03: NPW – Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans;

4. Category CLP04: SCM – Multi-Concentration Inorganics;

5. Category CLP05: SCM – Multi-Concentration Organics; and

6. Category CLP06: SCM – Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans.

(h) The parameters for which a laboratory may be certified to perform sample analysis in the air and/or emissions matrix are organized within the following categories:

1. Category AE01: Inorganics – Non-Metals Analysis;

2. Category AE02: Inorganics – Metals Analysis;

3. Category AE03: Asbestos Analysis;

4. Category AE04: Organics Analysis;

5. Category AE05: Radionuclides Analysis;

6. Category AE06: Air – Laboratory Developed and/or Non-Standard Methods;

7. Category AE07: Air Sample Collection;

8. Category AE08: Radon in Air; and

9. Category AE09: Radon in Air – Laboratory Developed and/or Non-Standard Methods.

(i) Table 2.1 illustrates the organization of Subchapters 3 through 9 (N.J.A.C. 7:18-3 through 9).

TABLE 2.1
Organization of Subchapters 3 through 9

SUB-CHAPTER	TITLE	CATEGORIES
3	General Laboratory Facilities & Equipment	All categories
4	Microbiology	DW01-DW02, DW12-DW13, NPW01-NPW02, NPW15-NPW16, SCM01, SCM14
5	Chemistry	DW03-DW09, DW12-DW13, NPW03-NPW11, NPW15-NPW16, BT01-BT08, SCM02-SCM11, SCM13-SCM14, CLP01-CLP06, AE01-AE04, AE06-AE07
6	Radiochemistry & Radon/Radon Progeny-in-Air	DW10-DW11, DW13, NPW13, NPW14, NPW16, SCM12, SCM14, AE05, AE06, AE08-AE09
7	Toxicity Testing	NPW12
8	Analyze Immediately and Continuous Monitoring	DW04, NPW04
9	Sample Requirements	All

(j) An out-of-State laboratory, which has received NELAP accreditation from a State that has received NELAP recognition, shall be eligible for reciprocal accreditation to perform environmental sample analyses in accordance with (a) through (i) above, provided:

1. The laboratory is NELAP accredited by a state recognized as a NELAP accreditation body for those fields of testing in which the laboratory is requesting accreditation pursuant to this subsection;

2. The laboratory submits to the Department an application on the form specified in N.J.A.C. 7:18-2.5; and

3. When requested by the Department, laboratory submits a copy of the laboratory's most recent (no more than two years old) NELAP on-site assessment reports.

(k) If upon review of the documents listed in (j)2 and 3 above, the Department determines that the methods used by the out-of-State laboratory are equivalent to the requirements of this chapter, the Department shall not require an on-site survey by its inspectors and certification shall be granted after the assessed certification fees are paid (See N.J.A.C. 7:18-2.9, Fees.)

(l) If, upon review of the documents listed in (j)2 and 3 above, the Department is unable to determine that the out-of-state laboratory has met the requirements of this chapter, then the Department shall contact the NELAP-primary accreditation body and request that it conduct an on-site assessment of the laboratory.

7:18-2.5 Procedure for initial application of a laboratory seeking certification

(a) A laboratory seeking initial certification for one or more parameters in any category listed in N.J.A.C. 7:18-2.4(c) through (h) shall submit an application to the Department, at the address listed in N.J.A.C. 7:18-1.6(a).

(b) The applicant shall complete the application form supplied by the Department, including the following:

1. The name of the applicant;

2. The mailing address and, if different, street address and municipality of laboratory location;

3. The hours of operation;

4. The areas in which certification is sought;

i. Regulatory programs;

ii. Categories;

iii. Parameters;

iv. Techniques; and

v. Method references and specific method numbers. A laboratory shall select one or more method reference and corresponding method when multiple method references for a given technique are included in the DSAMs;

5. The type of environmental laboratory, identified by code listed on the application form;

6. The names of the following individuals:

i. The applicant's owner;

ii. The individual designated as the manager pursuant to N.J.A.C.

iii. All supervisors designated pursuant to N.J.A.C. 7:18-2.10(a)2;

7. A description of the education and experience of the following individuals, and academic transcripts for each such individual:

i. The manager, if responsible for technical functions;

ii. All supervisors; and

iii. Other laboratory technical staff.

8. If the applicant has participated in any Department-authorized proficiency testing study during the 12 months immediately preceding the application, the applicant may submit the results of such proficiency testing for any parameters for which the applicant is seeking certification;

9. The certification required under N.J.A.C. 7:18-1.9(a)1, signed by the individual required under N.J.A.C. 7:18-1.9(b);

10. If the laboratory is applying for certification in any of the categories listed in N.J.A.C. 7:18-5.1(a) for which published MDLs are available, MDL data for such methods;

11. Any other information included on the form, which is reasonably necessary to enable the Department to determine whether the applicant should be certified; and

12. The appropriate fees, pursuant to N.J.A.C. 7:18-2.9, in the form of a check payable to "Treasurer, State of New Jersey."

(c) An application is administratively complete if it contains everything required under (b) above. The Department shall advise the applicant in writing whether the application is administratively complete. If the application is not administratively complete, the Department shall identify the deficiencies. A determination that the application is administratively complete does not authorize the laboratory to perform sample handling, preservation, and analyses and reporting of data as regulated by this chapter.

(d) In addition to the information required under (b) above, the applicant shall provide any information that the Department requests as being reasonably necessary to determine whether the applicant should be certified.

7:18-2.6 Conditions for the granting of certification

(a) To be eligible for certification, an applicant shall satisfy all of the requirements listed in 1 through 8 below:

1. The applicant has submitted a complete application meeting the requirements of N.J.A.C. 7:18-2.5(b), including the fees required under N.J.A.C. 7:18-2.9;

2. The applicant is capable of providing accurate, precise and reliable data in accordance with the mandates of State and Federal law and regulation;

3. The applicant possesses facilities, instruments, and equipment that meet the technical specifications required by the analytical methods, and that are properly maintained and operated;

4. The applicant's staff has the formal education, training and experience required under N.J.A.C. 7:18-2.10;

5. The applicant satisfies all applicable proficiency testing requirements under N.J.A.C. 7:18-2.13, including but not limited to acceptably analyzing any and all PT samples for each parameter within each category for which certification is sought;

6. The applicant satisfies the requirements for on-site audits under N.J.A.C. 7:18-2.14, including but not limited to the requirement to correct deficiencies identified by the Department in the on-site audit. If the applicant is seeking certification for radiochemistry: radioactivity and radionuclide testing, radon, and radon/radon progeny in air, and the Department is unable to schedule an on-site audit within 90 days after receiving an administratively complete application, the Department may grant temporary approval to a laboratory to analyze radiochemical samples, excluding radon/radon progeny-in-air, until the Department performs the on-site audit. If the Department grants temporary approval, the applicant shall continue to participate in an approved proficiency testing program and acceptably analyze the program's samples;

7. The applicant completes its analysis of PT samples and all other requirements for certification within the time specified by the Department; and

8. The applicant complies with all other requirements of this chapter relevant to certification, and demonstrates that it is capable of complying with the relevant technical standards of performance found in N.J.A.C. 7:18-3 through 9.

(b) If the Department determines that an applicant is eligible for certification under (a) above, the Department shall issue the applicant a certificate and an Annual Certified Parameter List. The Department shall include the following information in the Annual Certified Parameter List:

1. The regulatory programs in which the environmental laboratory is certified to perform sample analysis and to report results to the Department;

2. For each regulatory program listed in (b)1 above, the specific parameters for which the environmental laboratory has demonstrated competence; and

3. The analytical technique, method reference and corresponding method number for which the environmental laboratory is certified.

7:18-2.7 Procedures for renewal of certification status for a certified environmental laboratory

(a) Each certified environmental laboratory and each laboratory holding temporary approval shall follow the following procedure to renew its certification every certification year:

1. The laboratory shall obtain a renewal application form from the Department.

2. The laboratory shall review the information provided by the Department on the renewal application form. On the form, the laboratory shall correct any inaccurate or incomplete information, advise the Department of any changes in personnel or equipment, and indicate any desired modifications.

3. The laboratory shall submit the renewal application to the Department at the address listed in N.J.A.C. 7:18-1.6(a). When submitting the renewal application, the laboratory shall include the renewal application form provided by the Department, the fees required under N.J.A.C. 7:18-2.9, and the certification required under N.J.A.C. 7:18-1.9.

4. The laboratory shall submit the renewal application with the required fees by March 31 of each year. However, if the Department has not made the renewal application forms available by March 1, the deadline for submitting the renewal application shall be extended by one day for each day beyond March 1 that the forms are unavailable. For example, if the Department does not make the forms available until March 15, the deadline for submitting the renewal application shall be April 14.

5. A laboratory may submit a late renewal application after the deadline established under 4 above. However, if a late renewal application is submitted, the renewal may not be completed before the June 30 expiration date of the certification or temporary approval.

(b) If a laboratory's certification or temporary approval is not renewed before its expiration date, the certification or temporary approval and the Annual Certified Parameter List (if any) shall expire. If a laboratory's certification, temporary approval or ACPL expires, any analysis performed by that laboratory does not establish compliance with any regulatory program.

(c) A laboratory shall not submit a renewal application after the June 30 expiration date. If a laboratory fails to submit a renewal application before the expiration date, the laboratory's certification, temporary approval and ACPL (if any) shall expire. Any environmental laboratory allowing its certification to expire shall apply for a new certification by filing an initial application in accordance with N.J.A.C. 7:18-2.5.

7:18-2.8 Procedure for modification of certification status by the addition or deletion of parameters, categories and/or combined categories

(a) A certified environmental laboratory seeking to modify its certification, or a laboratory seeking to modify its application for certification under N.J.A.C. 7:18-2.5, shall submit an application to the Department at the address specified in N.J.A.C. 7:18-1.6(a). In the application, the laboratory shall include the following:

1. Any changes that the laboratory seeks to make in the areas for which it is certified or has applied to be certified, including all information required under N.J.A.C. 7:18-2.5(b)4;

2. Information required under N.J.A.C. 7:18-2.5(b)6 and 7, with respect to any additional personnel needed for additional areas of certification pursuant to N.J.A.C. 7:18-2.10;

3. Information required under N.J.A.C. 7:18-2.5(b)8, if applicable to the modification;

4. The certification required under N.J.A.C. 7:18-1.9(a), signed by the person required under N.J.A.C. 7:18-1.9(b); and

5. The fees required under N.J.A.C. 7:18-2.9, in the form of a check payable to "Treasurer, State of New Jersey." However, if the modification is part of a renewal application under N.J.A.C. 7:18-2.7(b), then the laboratory need not pay the fee for "Administrative Activities - Request for modification in certified, applied or interim approval status."

(b) Before approving the modification, the Department may require proficiency testing pursuant to N.J.A.C. 7:18-2.13 and/or an on-site audit pursuant to N.J.A.C. 7:18-2.14. The Department shall base its decision to require proficiency testing and/or an on-site

audit upon the degree of competence and compliance with this chapter that the environmental laboratory has demonstrated through previous proficiency testing and on-site audits.

(c) The Department shall approve the modification only if the laboratory satisfies all of the requirements under N.J.A.C. 7:18-2.6(a) that are applicable to the modification.

(d) Subsections (a) through (c) do not apply to a modification to delete one or more parameters or categories from a laboratory's certification. No payment of a fee or Department approval is required to delete a parameter or category. To delete one or more parameters or categories, the laboratory shall send written notification to the Department at the address specified in N.J.A.C. 7:18-1.6(a), by certified mail or other means that provides a receipt for delivery; provided however, that the laboratory may instead provide this written notification as part of a renewal application under N.J.A.C. 7:18-2.7. The deletion shall be effective upon the Department's receipt of the notice.

7:18-2.9 Fees

(a) A laboratory applying for an initial or renewal certification or for modification of a certification shall include with the application the fees required under this section. Fees are not refundable.

(b) The fee schedule is set forth below. To calculate the fee for a given service, add the fee for the administrative activity and the fee for each category affected by the application. For example, if a laboratory seeks an initial certification in category DW01, the fee would be the sum of $900 (the administrative activity fee) and $540 (the category fee), for a total of $1,440. For NELAP laboratories, the NELAP Supplemental Fee must also be included in the total.

	Environmental Laboratory Application, Change of Status, and Certification Categories	FEES
I.	**Administrative Activities**	
	Initial Application Fee	$900
	Renewal Application Fee	$600
	Request for Modification in Certified, Applied or Interim Approval Status	$400
	NJ-NELAP Supplemental Fee	$3,500
	Travel Assessment Fee (per hour, per day, per person)	$134
	Laboratory Developed and/or Non-Standard Methods Application and Evaluation Fee	$600
II.	**Drinking Water Matrix Categories (DW01-DW13)**	
DW01	Microbiology	$540
DW02	Parasitology and Molecular Microbiology	$1,675
DW03	Inorganic Parameters	$540
DW04	Analyze-Immediately and Continuous Monitoring	$235
DW05	Asbestos Analysis	$540
DW06	Metals	$540
DW07	Metals – ICP, ICP/MS and DCP	$840
DW08	Organic Parameters – Chromatography	$840
DW09	Organic Parameters – Chromatography/MS	$840
DW10	Radiochemistry – Radioactivity and Radionuclides	$840
DW11	Radon in Drinking Water	$370
DW12	Drinking Water Sample Collection	$235
DW13	Drinking Water – Laboratory Developed and/or Non-Standard Methods	$1,675

	Environmental Laboratory Application, Change of Status, and Certification Categories	FEES
III.	**NON-POTABLE WATER MATRIX CATEGORIES (NPW01-NPW16)**	
NPW01	Microbiology	$540
NPW02	Parasitology and Molecular Microbiology	$1,675
NPW03	Inorganic Parameters	$540
NPW04	Analyze-Immediately and Continuous Monitoring	$235
NPW05	Asbestos Analysis	$540
NPW06	Metals – NPW Preparation Methods	$235
NPW07	Metals	$540
NPW08	Metals – ICP, ICP/MS and DCP	$840
NPW09	Organics – NPW Preparation Methods	$235
NPW10	Organic Parameters – Chromatography	$840
NPW11	Organic Parameters – Chromatography/MS	$840
NPW12	Toxicity Testing	$1,675
NPW13	Radiochemistry – Radioactivity and Radionuclides	$840
NPW14	Radon in Non-Potable Water	$370
NPW15	Non-Potable Water Sample Collection	$235
NPW16	NPW – Laboratory Developed and/or Non-Standard Methods	$1,675
IV.	**Contract Laboratory Program Categories (CLP01-CLP06)**	
CLP01	NPW - Multi-Concentration Inorganics	$540
CLP02	NPW - Multi-Concentration Organics	$840
CLP03	NPW – Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans	$840
CLP04	SCM - Multi-Concentration Inorganics	$540
CLP05	SCM - Multi-Concentration Organics	$840
CLP06	SCM – Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans	$840
V.	**Solid and Chemical Materials Categories (SCM01-SCM14)**	
SCM01	Microbiology	$540
SCM02	Characteristics of Hazardous Waste and Physical Analyses	$235
SCM03	Inorganic Parameters and Preparation	$540
SCM04	Asbestos Analysis	$540
SCM05	Metals – SCM Preparation Methods	$235

	Environmental Laboratory Application, Change of Status, and Certification Categories	FEES
SCM06	Metals	$540
SCM07	Metals – ICP, ICP/MS and DCP	$840
SCM08	Organics – SCM Preparation and Screening Methods	$370
SCM09	Organic Parameters – Chromatography	$840
SCM10	Organic Parameters – Chromatography/MS	$840
SCM11	Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans	$840
SCM12	Radiochemistry – Radioactivity and Radionuclides	$840
SCM13	SCM Sample Collection	$235
SCM14	SCM - Laboratory Developed and/or Non-Standard Methods	$1,675
VI.	**Air and Emissions Matrix Categories (AE01-AE09)**	
AE01	Inorganics - Non-Metals Analysis	$370
AE02	Inorganics - Metals Analysis	$540
AE03	Asbestos Analysis	$540
AE04	Organics Analysis	$840
AE05	Radionuclides Analysis	$840
AE06	Air - Laboratory Developed and/or Non-Standard Methods	$1,675
AE07	Air Sample Collection	$370
AE08	Radon in Air	$370
AE09	Radon in Air - Laboratory Developed and/or Non-Standard Methods	$1,675
VII.	**Biological Tissue Matrix Categories (BT01-BT08)**	
BT01	Inorganic Parameters	$540
BT02	Metals – BT Preparation Methods	$235
BT03	Metals	$540
BT04	Metals – ICP, ICP/MS and DCP	$840
BT05	Organics – BT Preparation Methods	$235
BT06	Organic Parameters – Chromatography	$840
BT07	Organic Parameters – Chromatography/MS	$840
BT08	BT – Laboratory Developed and/or Non-Standard Methods	$1,675

(c) If a laboratory seeks to modify its certification as part of a renewal application under N.J.A.C. 7:18-2.7(b), the laboratory need not pay the fee for "Administrative Activities - Request for modification in certified, applied or interim approval status." The fee shall be the sum of the following:

1. The fee for "Administrative Activities - Renewal Application Fee for Certification"; and

2. The fee for each category for which the laboratory seeks to renew certification, or seeks to add certification. If the laboratory seeks to delete a category from its certification, the fee for that category shall not be included in the total fee.

(d) If a laboratory's application for certification is pending as of July 1 in a given year and it has not completed all of the requirements for certification by that date, the laboratory shall pay the Administrative Activities - Renewal Application Fee described in (b) above by July 1, but is not required to pay the fee for the category or categories in which certification is pending. If the laboratory becomes certified in such a category after July 1, it shall pay the fee for the category, pro-rated for the number of months (including any part of a month) remaining until the following July 1. The laboratory shall pay this fee within 30 days after the laboratory becomes certified. For example, if a laboratory applies for certification in Category DW01 on October 1, 2015, but does not become certified in that category until September 15, 2016, it shall pay fees as follows:

1. On October 1, 2015, $900 for the initial application fee and $540 for the category;

2. On July 1, 2016, $600 for the renewal application fee; and

3. Within 30 days after September 15, 2016, $450 representing the $540 category fee pro-rated for 10 months.

(e) Environmental laboratories applying for or renewing certification for a similar technology in more than one of the following combined categories are eligible for a reduced fee:

1. Microbiological parameters, Categories DW01, NPW01, and/or SCM01: $1,026

2. Analyze Immediately and Continuous Monitoring Categories DW04 and NPW04: $376

3. Metal Categories, DW06, NPW07, and/or SCM06: $1,026

4. Metals – ICP, ICP/MS, and DCP Categories DW07, NPW08, and/or SCM07: $1,596 and

5. Radon in Water, Categories DW11 and NPW14: $703.

(f) If the Department conducts an on-site audit of an out-of-State environmental laboratory, the laboratory shall be responsible for payment of the costs incurred by the certification inspector, in accordance with the following:

1. The direct cost of overnight accommodations, transportation, meals, miscellaneous expenses, and, if the laboratory is located outside the United States, expenses resulting from foreign currency exchanges, as follows:

i. The laboratory shall pay the certification inspector's lodging and transportation expenses directly to the hotel and transportation provider in advance of the on-site audit.

ii. If the Department pays the costs identified in (f)1 above, the laboratory shall reimburse the Department within 30 calendar days after the date of the Department's statement to the laboratory, setting forth the costs.

iii. If the certification inspector pays the costs identified in (f)1 above, the laboratory shall reimburse the certification inspector directly, within 30 calendar days after the date the certification inspector presents the laboratory with receipts or other evidence of costs incurred. A receipt or other evidence of costs incurred shall not be required for meals. The laboratory shall reimburse the certification inspector for meals in accordance with the applicable Federal per diem rates.

2. The costs paid by the laboratory under (f)1 above shall be only those incurred by the certification inspector in accordance with State and Federal travel policies, including, but not limited to, motor vehicle mileage reimbursement, and allowances for meals, incidental expenses, and per diem.

3. When an overnight stay is necessary in order for the certification inspector to conduct an audit, the Department shall calculate and assess the Travel Assessment Fee in (b) above for the certification inspector's travel time to and from the laboratory, not to exceed seven hours per inspector per travel day. Travel time is measured from the time the inspector leaves his or her home until the time he or she arrives at either the hotel or the laboratory, whichever is first. The Department shall provide the laboratory with a statement specifying the calculated Travel Assessment Fee. Within 30 calendar days after the date of the statement, the laboratory shall remit to the Department the fee specified on the statement. The Travel Assessment Fee shall be in addition to any other fees or expenses payable in accordance with N.J.A.C. 7:18-2.9.

(g) If the Department purchases PT samples for a laboratory, the laboratory shall reimburse the Department for the actual cost that the Department incurs to purchase the PT samples. The Department shall provide the laboratory with an invoice specifying the costs incurred. Within 30 calendar days after the date of the invoice, the laboratory shall remit to the Department the amount specified on the invoice.

7:18-2.9A Annual adjustment of fees

(a) When, based on budget considerations, the Department determines to adjust the fees established in N.J.A.C. 7:18-2.9, Fees, for the upcoming State fiscal year (which runs from July 1 to June 30), the Department shall:

1. Prepare a Fee Adjustment Report, in accordance with (b) below; and

2. Publish a notice of administrative change in the New Jersey Register that:

i. States that the Fee Adjustment Report is available on the Department's website at www.nj.gov/dep/oqa; and

ii. Sets forth the adjusted fees determined as provided at (b) below.

(b) In the Fee Adjustment Report, the Department shall:

1. Project the total amount of money required to fund the program in the upcoming State fiscal year. This projection shall consider the following:

i. The number and type of Department staff required to perform each activity for which fees are charged and the projected total salaries of those staff for the upcoming State fiscal year;

ii. The total cost of fringe benefits for those Department staff, calculated as the projected total salaries of those staff multiplied by a percentage set by the New Jersey Department of the Treasury that reflects costs associated with pensions, health benefits, workers' compensation, disability benefits, unused sick leave, and the employer's share of FICA;

iii. Indirect costs attributable to those Department staff, calculated as the total salaries and fringe benefits for those staff multiplied by a percentage known as the indirect cost rate. The indirect cost rate is negotiated annually with the U.S. Environmental Protection Agency and is the total of the Department's costs for management and administrative costs applicable to multiple cost objectives (including, but not limited to, indirect management and administrative salary and non-salary costs, applicable fringe benefits, building rent, and the Department's share of the Statewide Cost Allocation Plan) divided by total Department direct salaries plus applicable fringe benefits; and

iv. Projected operating costs attributable to those Department staff, including, but not limited to, costs for postage, telephone, travel, supplies, and data system management.

2. Project the total amount of revenue expected to be received from fees identified in N.J.A.C. 7:18-2.9 in the upcoming State fiscal year. This projection shall consider the following:

i. The amount and type of fees for initial or renewal certifications or modifications of certifications received in the previous State fiscal year. Any trend toward increasing or decreasing certification activities and such trend's impact, if any, on the amount and type of fees anticipated for the upcoming State fiscal year;

ii. Other data concerning economic trends reasonably likely to influence the amount and type of fees anticipated for the upcoming State fiscal year; and

iii. The fees in effect at the time such projection is made.

3. Project the total amount of money to be available from sources other than fees, such as State appropriations or Federal grants, for the upcoming State fiscal year;

4. Subtract the amounts in (b)2 and 3 above from the amount in (b)1 above. The remainder is the projected fee revenue shortfall for the upcoming State fiscal year; and

5. Divide the projected fee revenue shortfall in (b)4 above by the total amount of revenue expected to be received from fees in (b)2 above to determine the fee adjustment factor. The amounts of the adjusted fees for the upcoming State fiscal year shall be obtained by increasing the existing fees by the fee adjustment factor.

(c) When the Department increases fees in accordance with this section, each increased fee shall be rounded to the next whole dollar.

7:18-2.10 Environmental laboratory personnel requirements

(a) A certified environmental laboratory shall employ qualified personnel who possess the education, training, and experience required under this section. The laboratory shall maintain current employee records that include a resume and college transcript documenting each employee's training, experience, duties, and dates of relevant employment. The laboratory shall include at least the following personnel:

1. An environmental laboratory manager, who shall be the individual in responsible charge of the laboratory;

2. One or more supervisors, who shall be qualified in accordance with the applicable provisions of (b) below to perform the tests and analyses within the Category or Categories for which the environmental laboratory is certified, or seeks certification. The environmental laboratory manager may also serve as a supervisor provided that the manager meets the qualifications for supervisor;

3. A Quality Assurance (QA) officer. For a laboratory that is certified or seeks to be certified in any of Categories CLP01 through 6, the QA officer shall meet the applicable requirements of (b)9 below. For any other laboratory, the QA officer shall meet the applicable requirements of (b) below for a supervisor in any Category, provided however, that an individual who meets only the requirements for a supervisor in the Categories listed in (b)2 below may serve as the QA officer only in those Categories; and

4. If required under (b) below, technical support staff, who shall be qualified in accordance with the applicable provisions of (b) below for the tests and analyses within the Category or Categories for which the environmental laboratory is certified, or seeks certification.

(b) No environmental laboratory shall be certified to perform analyses in a Category unless the supervisor and operating personnel (where so indicated) meet the following requirements:

1. For Microbiological and Parasitology and Molecular Microbiology Testing in Categories DW01-DW02, NPW01-NPW02, or SCM01, the supervisor shall meet the requirements of at least one of the qualification levels listed below:

QUALIFICATION LEVEL	DEGREE	MICROBIOLOGY CREDITS	YEARS OF EXPERIENCE MICROBIOLOGICAL ANALYSIS[3]
A	≥BA/BS[1]	4[2]	1
B	AA[1]	4[2]	3
C	None	0[2]	5

[1]Degree in a chemical, physical, biological, or environmental science from an accredited institution.

[2]Course from accredited college, or equivalent course from a training institute if supervisor has less than four semester hours credit in bacteriology.

[3]Unless the requirements of footnotes 1 and 2 are more stringent, personnel requirements for Parasitology and Molecular Microbiology shall be in accordance with all associated method requirements.

2. For Chemical testing in analyze-immediately and continuous monitoring Categories DW04 and NPW04, and Categories DW03 & NPW03 for turbidity and residue-settleable, the supervisor shall have had at least three months of experience in performing these tests;

3. For Chemical Testing in Inorganic Parameters, Characteristics of Hazardous Waste and Physical Analyses, Inorganic Parameters and Preparation, and Inorganics – Non-Metals Analysis Categories: DW03, NPW03, SCM02-03, AE01, and BT01, the supervisor shall meet the requirements of at least one of the qualification levels listed below:

QUALIFICATION LEVEL	DEGREE	YEARS OF EXPERIENCE CHEMICAL ANALYSIS AND/OR TRAINING
A	≥BA/BS[1]	1[2]
B	AA[1]	3[2]
C	None	5[2]

[1] Degree in a chemical, physical, biological, or environmental science from an accredited institution.

[2] Have at least one year of laboratory experience in the chemical analysis of drinking water, non-potable water, solid and chemical materials, air and/or emissions, or biological tissue samples.

4. For chemical Testing in Metals, Metals – ICP, ICP/MS and DCP, Metals Preparation Categories, Inorganics – Metals Analysis, and Asbestos Analysis Categories: DW05-DW07, NPW05-NPW08, SCM04-SCM07, AE02-AE03, AE07, and BT02-BT04, the supervisor shall meet the requirements of at least one of the qualification levels listed below:

QUALIFICATION LEVEL	DEGREE	YEARS OF EXPERIENCE CHEMICAL ANALYSIS AND/OR TRAINING
A	≥BA/BS[1]	1[2]
B	AA[1]	3[2]
C	None	5[3]

[1] Degree in a chemical, physical, biological, or environmental science from an accredited institution.

[2] Have at least one year of laboratory experience in the analysis of drinking water, non-potable water, solid and chemical materials, air and/or emissions, or biological tissue samples; and have six months experience in one or more instrumental techniques for the determination of metals, minerals (asbestos), metal ions, or anions, or have completed a formal training course in the operation of one or more of those instruments.

[3] Same as footnote 2 above except that three years of laboratory experience in the analysis of drinking water, non-potable water, solid and chemical materials, air and/or emissions, or biological tissue samples is required.

5. Operators of ICP/MS instruments shall meet the requirements of (b)4 above, but in addition, are required to have both six months operating experience and a formal training course in ICP/MS;

6. Operators of transmission electron microscopes (TEMs) shall meet one of the qualification levels of (b)4 above, but the number of years of experience required at all levels must include one year in determining asbestos in air or water using a TEM and energy dispersive x-ray analyzer. Operators shall have completed a formal training course in transmission electron microscopy;

7. For Chemical Testing in Organic Parameters – Chromatography, Organic Parameters – Chromatography/MS, Organic Sample Preparation Categories, Organics Analysis and Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans Categories DW08-DW09, NPW09-NPW11, SCM08-SCM11, AE04, and BT05-BT07, the supervisor shall meet the requirements of at least one of the qualification levels listed below:

QUALIFICATION LEVEL	DEGREE	YEARS OF EXPERIENCE CHEMICAL ANALYSIS AND/OR TRAINING
A	≥BA/BS[1]	1[2]
B	AA[1]	3[2]
C	None	5[3]

[1] Degree in a chemical, physical, biological, or environmental science from an accredited institution.

[2] Have at least one year of laboratory experience in chemical testing of drinking water, non-potable water, solid and chemical materials, air and/or emissions, or biological tissue samples; and have six months experience in the instrumental technique (GC, LC, GC/MS, or LC/MS) being practiced for the analysis of drinking water, non-potable water, solid and chemical materials, air and/or emissions, or biological tissue samples. A formal training course in the instrumental technique for which certification is sought may be substituted for the experience requirements.

[3] Same as footnote 2 above except that three years of laboratory experience in chemical testing of drinking water, non-potable water, solid and chemical materials, air and/or emissions, or biological tissue samples is required.

8. Operators of GC/MS, and LC/MS instruments shall meet the requirements of (b)7 above, but in addition, are required to have both six months operating experience and a formal training course in the technique being practiced;

9. For Chemical Testing in Categories: NPW and SCM – Multi-Concentration Inorganics, NPW and SCM Multi-Concentration Organics, and NPW and SCM-Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans CLP01-CLP06, the laboratory shall have qualified personnel to perform the analyses under the CLP categories of analysis.

10. For Radiochemical Testing in Radiochemistry – Radioactivity and Radionuclides, Radon in Drinking Water, Radon in Non-Potable Water, and Radionuclides Analysis Categories: DW10-DW11, NPW13-NPW14, SCM12, and AE05, the supervisor shall meet the requirements of at least one of the qualification levels listed below:

QUALIFICATION LEVEL	DEGREE	YEARS OF EXPERIENCE CHEMICAL ANALYSIS AND/OR TRAINING
A	≥BA/BS[1]	5[2]
B	AA[1]	7[2]

[1] Degree in a chemical, radiochemical, radioisotope technology, biological, physical or environmental science from an accredited institution.

[2] Two years of experience must be in radiochemical analysis.

11. For Category AE08, Radon/Radon Progeny-in-Air, the supervisor shall meet the requirements of at least one of the qualification levels listed below:

QUALIFICATION LEVEL	DEGREE	YEARS OF EXPERIENCE CHEMICAL ANALYSIS AND/OR TRAINING
A	≥BA/BS[1]	2[2]
B	AA[1]	4[2]
C	None	6[2]

[1] Degree in a chemical, radiochemical, radioisotope technology, biological, physical or environmental science from an accredited institution.

[2] Two years of experience must be in radiochemical analysis.

12. For Toxicity Testing in Category NPW12, the supervisor shall meet the requirements of at least one of the qualification levels listed below:

QUALIFICATION LEVEL	DEGREE	CREDITS	YEARS OF EXPERIENCE TOXICITY TESTING AND/OR TRAINING
A	≥BA/BS[1]	6[2]	1[3, 4]
B	MA[3] OR MS[3]	6[2]	--[4]

[1] Degree in a biological, or environmental science from an accredited institution.

[2] Shall include or be supplemented by six semester credit hours in any of the following subjects: (a) General Zoology; (b) Biological Methods and Experimental Design; (c) Ichthyology.

[3] Shall have successfully completed at least six definitive bioassays prior to applying for supervisor. The laboratory shall retain the documentation for these assays, and make it available during an audit by a representative of the Department.

[4] Demonstrate competency in the operation of bioassay equipment and techniques during an audit by a representative of the Department.

13. For Laboratory Developed and/or Non-Standard Method Categories: DW13, NPW16, SCM14, AE06, AE09 or BT08, the supervisor shall meet the most stringent requirements listed for the category area of interest.

14. If the bachelor degree is required and was granted from a regionally accredited United States or Canadian college or university, the requirement is satisfied. If the degree was granted by a foreign college or university, a copy of the evaluation by the World Education Service, Inc., P.O. Box 5087, Bowling Green Station, New York, NY 10274-5087, (212) 966-6311, shall be provided to the Department; and

15. The Department may waive the need for specified years of experience or academic training if an individual demonstrates that he or she has knowledge, expertise and ability that is at least equal to what would be expected from an individual with the required amount of experience and academic training.

7:18-2.11 Duties of environmental laboratory personnel

(a) In its quality assurance/quality control manual maintained pursuant to N.J.A.C. 7:18-4.5, 5.5, 6.6, 7.7, and 8.4, a certified environmental laboratory shall include duties of the manager, all supervisors, and the quality assurance officer.

1. The duties of the manager include, but are not limited to the following:

i. The manager shall administer the operations of the environmental laboratory including the reporting of tests and analyses. The manager shall be available for personnel or telephone consultation with the environmental laboratory staff and the Department. If the manager is to be absent, the manager shall arrange for a substitute. When serving as supervisor or acting supervisor, the manager shall meet the requirements of N.J.A.C. 7:18-2.10(b);

ii. The manager shall assure that all laboratory personnel meet the applicable requirements of N.J.A.C. 7:18-2:10(b) for their classification;

iii. The manager or designee thereof shall sign reports of analytical data. The laboratory shall inform the Department of the designee's name and authority to sign reports; and

iv. The manager or designee assigned in (a)1iii above, shall obtain a Personal Identification Number from the Department, as specified at N.J.A.C. 7:18-1.9(c), for the electronic submittal of data required under the statutes listed at N.J.A.C. 7:18-1.1(c). Submission of data using that PIN certifies that the manager or assigned designee believes that the submitted information is true, accurate, complete and generated according to the procedures contained in N.J.A.C. 7:18.

2. The duties of supervisors include, but are not limited to the following:

i. Each supervisor shall monitor the performance of technical personnel performing the analysis of a parameter to determine whether the personnel are complying with applicable requirements of this chapter. Each supervisor shall report results within the Category or Categories for which the supervisor is qualified;

ii. Each supervisor shall only perform tests or analyses within the Category or Categories for which the supervisor is qualified; and

iii. Each supervisor shall oversee the performance of all laboratory procedures, tests, analyses, and quality assurance within the Category or Categories for which the supervisor is qualified, to assure that it is in compliance with this chapter.

3. The duties of the quality assurance officer include, but are not limited to the following:

i. The quality assurance (QA) officer shall ensure that the environmental laboratory follows the quality control procedures of the DSAMs and of N.J.A.C. 7:18-3 through 8; and

ii. The QA officer shall implement the procedures of the environmental laboratory's quality assurance/quality control manual, pursuant to N.J.A.C. 7:18-4.5, 5.5, 6.6, 7.7, and 8.4.

7:18-2.12 Criteria for acceptance and analysis of environmental regulatory samples

(a) A certified environmental laboratory shall offer as a service only those tests, analyses, and procedures that:

1. Are within the scope of the laboratory's certification and Annual Certified Parameter List;

2. For which it has a qualified supervisor who meets the applicable requirements of N.J.A.C. 7:18-2.10(b); and

3. For which personnel, equipment and facilities meeting the applicable requirements of this chapter are available.

(b) An environmental laboratory, certified in an analytical method and claiming to perform that method for parties other than those in the regulated community, shall always follow the requirements and criteria cited in that specific analytical method.

(c) This section applies to certified environmental laboratories and environmental laboratories that hold temporary approval.

7:18-2.13 Proficiency Testing Program

(a) A laboratory seeking certification for any parameter shall successfully complete the proficiency testing program described in (h) through (j) below for that parameter.

(b) To maintain certification, a certified environmental laboratory shall successfully complete proficiency testing pursuant to (h) through (j) below.

1. For all categories other than radiochemical testing, radon in water, and radon/radon progeny-in-air:

i. Each certified laboratory shall obtain and analyze PT samples from a Department-approved PT sample provider within the timeframe and in accordance with the schedule that the Department establishes. A Department-approved PT sample provider is one that is accredited by a proficiency test provider accreditor that meets the TNI requirements. The Department will announce at least two pre-determined timeframes a year for the required parameters with a matrix. All laboratories certified for that parameter (including indicator parameters) shall participate in at least one proficiency test study each year per matrix in accordance with the predetermined schedule. If a laboratory fails to successfully complete a proficiency test study, it shall participate in another proficiency test study within the Department's prescribed timeframe.

ii. Upon the Department's request, a particular laboratory shall participate in proficiency tests in addition to the test or tests under 1 above. The Department may make such a request based upon information indicating that the laboratory's analyses for the parameter in question do not meet the requirements of this chapter; and

iii. A laboratory shall not be required to participate in more than two proficiency tests pursuant to i and ii above in a certification year.

2. For radiochemical testing, a laboratory shall acceptably analyze one PT sample obtained from a Department-approved PT sample provider within the prescribed timeframe and schedule designated by the Department per year.

3. For radon in water, a laboratory shall acceptably analyze all required PT samples, obtained from a Department-approved PT sample provider within the prescribed timeframe and schedule designated by the Department, not to exceed four samples per year, at such time as radon in water PT samples are available.

4. For radon/radon progeny-in-air, a laboratory shall not be required to participate in more than four proficiency tests in a certification year.

(c) Proficiency testing for a specific parameter or group thereof in a particular Category is not required if the Department determines that PT samples are unavailable.

(d) Except as provided in (e) through (g) below, the Department-approved PT sample provider shall distribute PT samples or make them available, at times and frequencies that the Department determines are necessary for effective administration of proficiency testing. N.J.A.C. 7:18-2.9(g) provides for the Department to be reimbursed if it purchases PT samples to send to a laboratory for use in the proficiency testing program.

(e) A laboratory shall obtain PT samples for the determination of radioactivity and radionuclide parameters in water from a Department-approved PT sample provider within the prescribed timeframe and schedule designated by the OQA.

(f) A laboratory shall obtain PT samples for the determination of radon in water from a Department-approved PT sample provider within the prescribed timeframe and schedule designated by the OQA, at such time as radon in water PT samples are available.

(g) A laboratory shall obtain PT samples for determination for radon/radon progeny-in-air from the USEPA's Radon Measurement Program or from a Department-approved PT sample provider.

(h) A laboratory participating in the proficiency testing program shall perform the following tasks:

1. Receive, examine, and analyze PT samples according to instructions;

2. Maintain all records of PT testing results;

3. For all Categories, except radiochemical testing, radon in water, and radon/radon progeny-in-air, request that the approved PT sample provider submit results of PT testing to the Department for evaluation in accordance with the Department's instructions;

4. For radiochemical testing, radon in water, and radon/radon progeny-in-air Categories, submit results of PT testing in accordance with the directions of the USEPA or the authorized proficiency testing program; and

5. For radon/radon progeny-in-air, request that the approved PT sample provider submit evaluated radon measurement proficiency results to the Department.

(i) The specific requirements for the proficiency testing program are set forth below.

1. For a laboratory seeking certification in any Category other than radiochemical testing, radon in water, or radon/radon progeny-in-air:

i. A laboratory that has participated in a PT study conducted by a Department-approved PT sample provider for the Drinking Water, Non-Potable Water, Air and Emissions, and/or Solid and Chemical Materials Proficiency Testing Program during the immediate

preceding 12 months may submit, for the Department's evaluation, the results for the parameters for which it is applying in the Department's Drinking Water, Non-Potable Water, Air and Emissions, and/or Solid and Chemical Materials Programs. Otherwise, the conditions of (i)1ii below apply; and

ii. A laboratory seeking certification in a specific parameter or group thereof under a particular Category shall acceptably analyze a PT sample obtained from a Department-approved PT sample provider. The laboratory shall have two separate opportunities to acceptably analyze PT samples for each parameter. If the laboratory fails in both opportunities to acceptably analyze PT samples for a parameter, the Department shall deny the application for certification. The laboratory may reapply for certification in that parameter.

2. For a laboratory seeking certification in radiochemistry, radioactivity and radionuclide testing, or radon/radon progeny-in-air:

i. For analysis of radiochemical parameters in water, the laboratory shall have acceptably analyzed a PT study conducted by a Department-approved PT sample provider within the preceding 12 months. If PT samples are unavailable for the required parameters, then results for two cross-check samples that are within the control limits established for each parameter in which certification is sought shall be submitted to the Department for evaluation;

ii. For analysis of radon in drinking water and non-potable water samples, the laboratory shall have a Department-approved PT sample provider submit final PT reports indicating that during the applicant's participation in the most recent Radon Intercomparison Study, at least one PT sample or two cross-check samples were within the established control limits within the preceding 12 months; and

iii. For analysis of radon/radon progeny-in-air, the laboratory shall have a Department-approved PT sample provider submit final PT reports showing passage of a Department-approved PT study. The PT study administered shall have been performed within the past 12 months and obtained from a Department-approved PT sample provider. The laboratory shall pass a test for each measurement device/technique for which certification is desired, prior to applying for certification.

3. For certified environmental laboratories:

i. For all Categories, except radiochemical testing, radon in water, and radon/radon progeny-in-air, the Department shall notify the laboratory, in writing by certified mail or other means that provides proof of delivery, of the specific timeframe within which laboratories are required to analyze the PT samples, the due date by which the final PT study results are to be submitted to the Department by the PT sample provider, a list of Department-approved PT sample providers, and the list of parameters required for analysis within the applicable matrix.

ii. In connection with a proficiency test announced under (i)3i above, if a laboratory does not meet the deadlines or comply with any

requirement set forth in the announcement notice, the laboratory's PT study results shall be considered unacceptable and an additional PT sample shall be analyzed as directed by the Department;

iii. For the Radiochemical Categories not included in the Department's pre-determined schedule, the scheduling and requirements for the proficiency test are as established by the Department-approved PT sample Provider. For the Radon/Radon Progeny-in-Air Categories, the laboratory shall contact the OQA to obtain a list of exposure facilities approved for the Department's authorized radon/radon progeny-in-air proficiency testing program. The laboratory shall arrange with the exposure facility to schedule an exposure period for the laboratory's test devices;

iv. During a proficiency test, if a laboratory decides to drop any parameter pursuant to N.J.A.C. 7:18-2.15(a), it shall notify the Department before the final date for submission of results. Otherwise, the laboratory shall report results for all analyses for which it was certified at the time of the proficiency test announcement;

v. The Department shall consider the results of each proficiency test in determining whether the certification of a laboratory should be maintained or suspended;

vi. The Department may require a laboratory to analyze additional PT samples beyond what is required under (i)3i above, if information available to the Department indicates that the laboratory is failing to acceptably analyze samples; and

vii. Upon request of any person using or requesting the services of a certified environmental laboratory, the laboratory shall make available all results of the past 12 months' proficiency testing; and

viii. Upon a laboratory's receipt of unacceptable results for a PT study, the laboratory shall investigate the cause for the failure and implement any necessary corrective action. This corrective action shall be documented immediately. Documentation shall be maintained and made available to the Department upon request.

(j) For all drinking water, non-potable water, air and/or emissions, solid and chemical materials, and radon/radon progeny-in-air parameters tested using Department-approved PT studies, the reported values must fall within the acceptance limits established by the PT sample provider for a given PT sample, except:

1. For the radon/radon progeny-in-air measurement proficiency program, the criterion used in evaluating the radon measurement test results requires that the value of the individual relative error (IRE) of radon measurement not exceed 25 percent.

7:18-2.14 On-site audits

(a) A certified environmental laboratory or a laboratory seeking certification shall permit and facilitate scheduled and unscheduled audits by the OQA or its designee as a condition of obtaining and maintaining certification. The laboratory shall allow the OQA access to its facility to conduct the audit. A refusal to allow entry is grounds for revocation or denial of certification.

(b) During an on-site audit, a certified environmental laboratory or a laboratory seeking certification shall demonstrate compliance with the Department's standards as set forth in this chapter for performing the methods for which certification is sought.

(c) A certified environmental laboratory that has moved to a new location shall comply with N.J.A.C. 7:18-2.19. The OQA shall perform an on-site audit at the new location.

(d) During an audit, the OQA shall assess the following: personnel qualifications; working conditions, including adequacy of space; equipment and supplies; organizational efficiency; sample handling and chain of custody; SOPs for quality control operations, methods, and data handling; maintenance of all required records; and compliance with the other requirements of this chapter.

(e) The OQA shall provide the laboratory with a written report listing the deficiencies identified during the audit. The Department may assess penalties pursuant to N.J.A.C. 7:18-10 or suspend or revoke the laboratory's certification (if any), if the audit identifies grounds for such action.

(f) Within 30 days after receiving the audit report under (e) above, the laboratory shall submit a plan to correct the deficiencies. In the plan, the laboratory shall list the corrective actions it will take, and the date by which the corrective actions are to be completed. For a certified environmental laboratory or a laboratory holding temporary approval, the date for completing the corrective actions shall be no later than 90 days after the date the audit report is delivered to the laboratory. For other laboratories, the laboratory may establish the date for completing the corrective actions at its discretion.

(g) The laboratory shall notify the Department in writing when it has completed the corrective actions identified in the plan under (f) above. Failure to correct all deficiencies by the date established in the plan is grounds for revocation or denial of certification.

(h) An out-of-state environmental laboratory shall pay a fee to cover the travel expenses incurred by an auditor during an on-site audit in accordance with N.J.A.C. 7:18-2.9(f).

7:18-2.15 Cancellation, suspension or revocation of certification

(a) Any certified environmental laboratory may cancel its certification in any Category, or in any parameters within a Category, by notifying the Department in writing. Cancellations during a PT study are subject to N.J.A.C. 7:18-2.13(i)3iv. When totally withdrawing from the environmental laboratory certification program, the environmental laboratory shall enclose its certificate and ACPL with the letter of notification. This cancellation notification shall not entitle the environmental laboratory to any refund of its certification fees.

(b) The Department may suspend a certified environmental laboratory's certification for any one or more of the grounds listed below. Grounds for suspension include the following:

1. For all Categories, except Radiochemical Testing and Radon/Radon Progeny-in- Air, failure to submit results of PT sample analyses for every required parameter in two consecutive proficiency studies, pursuant to N.J.A.C. 7:18-2.13;

2. For the Radiochemical or Radon/Radon Progeny-in-Air Categories, failure to submit results of PT samples in two consecutive PT studies as required under N.J.A.C. 7:18-2.13(h);

3. For all Categories, except those in Radiochemical Testing, Radon/Radon Progeny-in-air, or Categories DW08, DW09, NPW10, NPW11, SCM09, SCM10, SCM11, CLP02, CLP03, CLP05, CLP06, and AE04, failing to acceptably analyze all samples for any one parameter in two consecutive PT studies. This failure is grounds for suspension in the parameter;

4. For Categories DW08, DW09, NPW10, NPW11, SCM09, SCM10, SCM11, CLP02, CLP03, CLP05, CLP06, and AE04, failing to acceptably analyze all samples for any one parameter in two consecutive proficiency studies. This failure is grounds for suspension in the method used to analyze the parameter in question;

5. For radiochemical parameters, failure to acceptably analyze one PT sample or two cross-check samples per year;

6. For determination of radon in water, failure to acceptably analyze all required PT samples, not to exceed four samples per year;

7. For radon/radon progeny-in-air, failure to acceptably analyze all required RMP tests made available during the fiscal year through an authorized proficiency testing program for each stationary detection device, not to exceed four tests per year and not less than one per year;

8. The occurrence of a moderate or major violation (as defined at N.J.A.C. 7:18-10.4), if one of the following has occurred within the three years preceding the violation:

   i. Another moderate or major violation for the same parameter or method; or

   ii. Another moderate or major violation arising from the same type of act or omission (such as an act or omission concerning laboratory personnel certification); or

9. The violation of an order by the Department to correct a moderate or major violation within a specified time.

(c) The Department may suspend a laboratory's certification for any of the grounds listed in (b) above, in accordance with the procedure described in (c)1 through 6 below.

1. The Department shall issue an administrative order to the laboratory. In the administrative order, the Department shall state the areas in which the certification is suspended, the minimum duration of the suspension and the reason for the suspension.

2. The minimum duration of the suspension shall be six months.

3. If the suspension is based on any of the grounds listed in (b)1 through 7 above, the Department may limit the suspension to the method or parameter in question, or to the method used to analyze the parameter in question.

4. A suspension ends only after all of the following requirements have been satisfied:

   i. The minimum duration of the suspension has elapsed;

   ii. The laboratory has corrected all circumstances which provided grounds for the suspension;

   iii. If the suspension is based on any of the grounds listed in (b)1 through 7 above, the laboratory has successfully completed a proficiency test pursuant to N.J.A.C. 7:18-2.13. If the suspension is based on the grounds listed in (b)7 above for radon/radon progeny-in-air, the laboratory shall successfully complete another proficiency test within 120 days after the date of the administrative order. If the laboratory does not successfully complete the proficiency test within 120 days, the certification shall automatically be revoked for each stationary detection device that is the subject of the suspension;

   iv. The laboratory has made a written request to the Department to end the suspension. With the request, the laboratory shall include documentation demonstrating that the correction described in ii above has been made; and

   v. The laboratory has received written notice from the Department that the suspension has ended.

5. If the suspension applies to all Categories in which the laboratory is certified, the laboratory shall return its certificate and ACPL to the Department within 10 days of receiving the administrative order.

6. A laboratory may request a hearing in accordance with N.J.A.C. 7:18-2.17 to contest a suspension.

(d) The Department may revoke an environmental laboratory's certification for any one or more of the following grounds:

1. The recurrence of any of the grounds for suspension listed in (b) above, after the laboratory's certification has been suspended based on such grounds;

2. A material misrepresentation made to the Department;

3. A material misrepresentation made to persons other than the Department, involving the laboratory's status as a certified environmental laboratory. For example, if a laboratory is performing an analysis for a customer who will not be using the results for regulatory purposes, and the laboratory is using a method for which it is not certified, the laboratory will have made a misrepresentation unless it:

   i. Disclosed to the customer that it is using a method for which it is not certified; or

   ii. Did not hold itself out to the customer as a certified environmental laboratory;

4. Making a change in personnel, facilities or techniques which results in a material failure to meet the standards of this chapter;

5. A violation of N.J.A.C. 7:18-2.12;

6. Failure to allow access for an on-site audit as required by N.J.A.C. 7:18-2.14(a); or

7. Failure to correct all deficiencies by the date established in a corrective action plan as required by N.J.A.C. 7:18-2.14(g).

(e) The Department may revoke a laboratory's certification for any of the grounds listed in (d) above, in accordance with the procedure described in (e)1 through 4 below.

1. The Department shall issue an administrative order to the laboratory. In the administrative order, the Department shall state the areas in which the certification is revoked, and the reason for the revocation.

2. If the revocation is based on a recurrence or failure to correct any of the grounds listed in (b)1 through 7 above, the Department may limit the revocation to the parameter in question, or to the method used to analyze the parameter in question.

3. If the revocation applies to all parameters and all methods in which the laboratory is certified, the laboratory shall return its certificate and ACPL to the Department within 10 days of receiving the administrative order.

4. A laboratory may request a hearing in accordance with N.J.A.C. 7:18-2.17 to contest a revocation, except as provided in (f) below.

(f) The Department may revoke a laboratory's temporary approval for any of the grounds listed in (b) or (d) above. The laboratory shall not have a right to a hearing to contest the revocation.

7:18-2.16 Effect of suspension or revocation of certification

(a) After certification for a parameter or method is revoked, or while certification for a parameter or method is suspended, a laboratory is not considered a certified environmental laboratory for purposes of that parameter or method. Accordingly, the laboratory is not authorized to analyze samples within that parameter or pursuant to that method for the purpose of establishing compliance with any regulatory program.

(b) A laboratory may apply for certification for any parameter or method for which its certification is revoked. However, the laboratory may not become recertified until at least one year after the revocation has become effective.

7:18-2.17 Procedure for requesting and conducting adjudicatory hearings

(a) A laboratory may request an adjudicatory hearing to contest a decision by the Department to suspend, revoke or deny certification, or assess a civil administrative penalty.

(b) All requests for an adjudicatory hearing must be received by the Department within 20 calendar days after the laboratory requesting the hearing receives notice of the Department's action. If the Department does not receive a hearing request within the allotted time, it shall deny the hearing request.

(c) A laboratory requesting a hearing shall provide the following information in writing to the Department at the address in (f) below:

1. The name, address, and telephone number of the laboratory requesting the hearing, and its authorized representative;

2. A copy of the document in which the Department has stated the decision;

3. A description of any facts or issues which the petitioner believes constitute a defense to the allegations made by the Department;

4. An admission or denial of each of the Department's findings of fact in the administrative order, notice of civil administrative penalty assessment or other document containing the Department decision. If the laboratory requesting the hearing lacks sufficient knowledge or information to form a belief as to the truth of a finding, the laboratory shall so state and this shall have the effect of a denial. A denial shall fairly meet the substance of the findings denied. When the laboratory intends in good faith to deny only a part or a qualification of a finding, the laboratory shall specify so much of it as is true and material and deny only the reminder. The laboratory may not generally deny all of the findings, but shall make all denials as specific denials of designated findings. For each finding the laboratory denies, the laboratory shall allege the fact or facts as the laboratory believes it or them to be;

5. Information supporting the request and specific reference to or copies of other written documents relied upon to support the request;

6. An estimate of the time required for the hearing (in days and/or hours);

7. A request, if necessary, for a barrier-free hearing location for physically disabled persons; and

8. A statement that the laboratory does or does not agree to the Department's holding the hearing request for 90 days before transmitting it to the Office of Administrative Law, to allow time to negotiate a settlement of the dispute as provided by N.J.A.C. 1:1-8.1(b).

(d) If the laboratory fails to include all of the information required by (c)1 through 6 above, the Department may deny the hearing request.

(e) All adjudicatory hearings shall be conducted in accordance with the Administrative Procedures Act, N.J.S.A. 52:14-1 et seq., and the Uniform Administrative Procedure Rules, N.J.A.C. 1:1.

(f) The laboratory shall send its request for an adjudicatory hearing to the Department at the address listed below (with a copy to the Department's enforcement bureau which issued the decision):

Office of Legal Affairs
New Jersey Department of Environmental Protection
PO Box 402
Trenton, New Jersey 08625-0402
Attention: Adjudicatory Hearing Request

7:18-2.18 Termination of certification upon transfer of controlling interest

(a) A certified environmental laboratory's certification shall terminate upon transfer of a controlling interest in the laboratory, unless the transferor complies with the procedures set forth in (b) or (c) below. A transfer of a controlling interest occurs if:

1. A person who held a controlling interest in the laboratory before the transfer does not hold a controlling interest after the transfer; or

2. A person who did not hold a controlling interest in the laboratory before the transfer holds a controlling interest after the transfer.

(b) The certification of an environmental laboratory shall not terminate upon the transfer of a controlling interest and shall be transferred to the transferee, if the following requirements are satisfied:

1. The transferor shall notify the Department in writing of the proposed transfer, prior to the transfer;

2. The transferor shall allow the Department to perform an on-site audit of the certified laboratory upon request; and

3. The certified environmental laboratory corrects all deficiencies identified by the Department in the audit within 30 calendar days after receiving notice of the deficiencies, and pays any associated penalties.

(c) The certification of a certified environmental laboratory shall not terminate upon the transfer of a controlling interest under (a) above, and shall be transferred to the transferee, if the transferee agrees with the Department in writing to assume all of the transferor's liabilities in connection with the following:

1. Any deficiencies in the operations of the laboratory; and

2. All penalties arising in connection with the laboratory from occurrences or circumstances existing before the date of the transfer.

7:18-2.19 Information to the Department

If the name, location, address, telephone number, or identity of the manager or a supervisor of a certified environmental laboratory changes, the laboratory shall send written notice of the change within 15 calendar days to the Department, at the addresses listed in N.J.A.C. 7:18-1.6(a) and 2.5(a). If the change involves the identity of a supervisor, the laboratory shall include with the notice information establishing that the new supervisor's qualifications satisfy the applicable requirements of N.J.A.C. 7:18-2.10(b).

7:18-2.20 Application for alternate test procedure (ATP) approval

(a) Modifications to DSAMs or new methods not included in DSAMs, Laboratory Developed, and/or Non-Standard Methods are considered ATPs. A certified environmental laboratory or laboratory holding temporary approval shall not use such a modification or new Laboratory Developed and/or Non-Standard Method unless the Department has approved it as an ATP and added it to the laboratory's Annual Certified Parameter List. Any certified environmental laboratory may apply to the Department for approval of an ATP, in accordance with this section. The Department will not approve a proposed ATP unless it meets the following requirements:

1. An ATP proposed as a modification to a DSAM must achieve equal or improved precision, accuracy, and method detection limits or quantitation limits as appropriate when compared to the approved method for the specified parameters;

2. If the ATP is proposed as a new method rather than as a modification to a DSAM, the laboratory must demonstrate that the proposed ATP will achieve precision, accuracy and method detection limits or quantitation limits as appropriate, that are sufficient to meet the data quality requirements of the regulatory program for which the ATP is to be used; and

3. For methods that include modifications to the determinative step, preservations, or pretreatment procedures, the laboratory can obtain certification for a laboratory developed and/or non-standard method option its Annual Certified Parameter List as long as the laboratory and its client agree to the use of the method for other than the reporting of compliance data, or for use as specified in a Quality Assurance Project Plan or other form of contracted analytical services.

(b) The Department may approve an ATP for a laboratory method that is driven by client needs for limited use, or for limited use for a facility-specific request.

1. The Department may approve an ATP for limited use by a certified environmental laboratory if the ATP is developed by the environmental laboratory to improve the analysis of a specific parameter. If the Department approves the ATP for limited use, it can be used only by the certified environmental laboratory that receives the approval.

2. The Department may approve an ATP for limited use by a certified environmental laboratory for a facility-specific request. Facility-specific method requests are methods developed by an environmental laboratory to meet unique analysis requirements of a particular client facility when DSAMs are not applicable. Generally, these methods are DSAMs modified for macro/micro analysis or matrix interferences. The facility-specific ATP can be used only by the certified environmental laboratory that receives the approval, and only for analyses performed for the specified client facility.

(c) To apply for an ATP, the certified environmental laboratory shall submit a letter of request to the Department, including:

1. The name and address of the certified environmental laboratory seeking the ATP approval;

2. The name of the Department program that requires the parameter analysis;

3. Applicable permit numbers or site identification numbers;

4. The name of each parameter and method for which approval of the ATP is being requested;

5. Justification for using the ATP instead of those methods included in DSAMs;

6. A detailed description (standard operating procedure) of the proposed ATP, including any references to published studies of the applicability of the ATP to the effluents, source water, waste or matrices in question;

7. Precision, accuracy, and method detection limits (MDLs) data or quantitation limits as appropriate in a reference matrix for the proposed ATP. MDLs shall be determined as outlined in Appendix B of Section 136 of 40 CFR;

8. Precision, accuracy, and MDL data or quantitation limits as appropriate for the parameter(s) of interest spiked into the actual matrices covered by the method;

9. Comparability data (precision, accuracy, MDLs, or quantitation limits) for the performance of the proposed ATP versus that of a DSAM if the parameter(s) can be analyzed by the DSAM; and

10. The ATP application fee required under N.J.A.C. 7:18-2.9.

(d) The Department shall evaluate applications for ATP approvals in accordance with (a) above. The certified environmental laboratory shall remit the ATP approval fee required under N.J.A.C. 7:18-2.9 after the Department has accepted the ATP for evaluation. The fee is applicable whether or not the ATP is approved.

7:18-2.21 Changes in status of DSAMs

(a) Changes in the DSAM status of methods approved for use by certified environmental laboratories will be accomplished by the Department as follows:

1. New or revised methods promulgated as amendments or supplements to a rule incorporated by reference under N.J.A.C. 7:18-1.5(a) shall become DSAMs on the effective date of the amendment or supplement; and

2. New or modified CERCLA CLP methods shall become DSAMs when new or revised Invitation for Bid (IFB) documents containing these methods are published in the Commerce Business Daily; and

3. New or revised Department analytical methods for sludge analysis shall become DSAMs on the operative date of the amendments or supplements to N.J.A.C. 7:14C adding or revising such methods.

4. The Department may establish additional DSAMs by amending this chapter pursuant to the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq. Examples of additional DSAMs include:

i. Discretionary USEPA methods published in the CFR or in USEPA methods manuals;

ii. Methods published by organizations with recognized expertise in method development, including but not limited to the American Society for Testing Materials (ASTM), the American Public Health Association (APHA), and the United States Geological Survey (USGS); and

iii. Other methods that the Department determines are necessary to fulfill the analytical requirements imposed by one of the regulatory programs listed at N.J.A.C. 7:18-2.2(a), are Department validated methods and shall be included in the DSM category. A Department validated method shall become a DSAM upon fulfillment of the rulemaking procedures contained in N.J.A.C. 1:30. In addition to publication in the New Jersey Register as a part of the rule promulgation process, copies

of proposed Department validated methods will be available from the Office of Quality Assurance at the address listed herein at N.J.A.C. 7:18-1.6.

5. Notification of methods withdrawn from DSAM status will be published in the New Jersey Register pursuant to N.J.A.C. 1:30.

7:18-2.22 Required use of DSAMs

(a) In analyzing a regulatory sample, a certified environmental laboratory shall use only:

1. A DSAM from an applicable category for which the laboratory is certified; or

2. An ATP approved by the Department for the laboratory and, if applicable, for the facility in question.

(b) The requirements of (a) above do not apply to an analysis for which all of the requirements of (b)1 through 3 below are satisfied:

1. The client has provided a written statement confirming that the analysis will not be used for regulatory purposes;

2. The laboratory's report of the results of the analysis prominently displays the following statement: "This analysis is not to be used for the purpose of determining compliance with the Safe Drinking Water Act, the Water Pollution Control Act, the portion of the Radiation Protection Act governing radon and radon progeny, the Solid Waste Management Act, the Industrial Site Recovery Act, or the Spill Compensation and Control Act; any regulation or order issued pursuant to any of those statutes; or the USEPA's CERCLA Contract Laboratory Program."; and

3. The laboratory meets the requirements of N.J.A.C. 7:18- 2.15(d)3.

SUBCHAPTER 3 GENERAL REQUIREMENTS FOR FACILITIES, EQUIPMENT AND SAFETY

7:18-3.1 Scope

This subchapter establishes requirements for the facilities, general instrumentation, and equipment that a certified environmental laboratory shall maintain, and safety practices that a certified environmental laboratory shall implement, when performing analyses. The requirements of the subchapter are minimum performance standards that an environmental laboratory shall achieve when analyzing regulatory samples by methods for which it is certified. In addition to the requirements of this subchapter, requirements for the use of more specialized procedures, equipment and supplies are found in N.J.A.C. 7:18-4 through 9.

7:18-3.2 Environmental laboratory facilities and safety

(a) No certified environmental laboratory shall perform analyses unless the facility and equipment meet the following requirements:

1. Each certified environmental laboratory shall have available at least 100 square feet of floor space per analyst and at least 15 linear feet of bench space per analyst. Floor space and bench space are not required for analyze-immediately parameters and continuous monitors. Environmental laboratory space shall include the following equipment:

   i. A sink with hot and cold running water, except a sink with hot and cold running water is not necessary for radon/radon progeny analysis of air samples, analyze-immediately parameters and continuous monitors;

   ii. Polarized, grounded electrical outlets rated at 120 VAC and sufficient amperage to meet the needs of installed equipment. If equipment requires an electrical supply other than 120 VAC, the laboratory shall provide the equipment with the required service and outlet;

   iii. When required by the method, a supply of natural gas or liquefied petroleum gas with proper attachments and a vacuum line, pump, or aspirator; and

   iv. An exhaust hood if noxious fumes are generated.

2. The temperature and humidity within the certified environmental laboratory shall be maintained within the limits required for the proper performance for each test or analysis and for the proper operation of instruments which may be affected by variations in temperature or humidity.

(b) No certified environmental laboratory personnel shall perform analyses without following all the safety practices as stated in the analytical method.

7:18-3.3 Requirements for environmental laboratory equipment, supplies, materials, and instrumentation

(a) No certified environmental laboratory shall perform testing and analysis of regulatory samples unless it has on the premises the equipment, supplies, materials, and instruments needed to perform those tests and analyses for which it is certified. The equipment, supplies, materials, and instruments shall be under the control of the supervisor and meet both the requirements of N.J.A.C. 7:18-4 through 8 and the following:

1. Analytical balances shall meet and be operated in accordance with the following requirements:

   i. Each analytical balance shall have a sensitivity of 0.1 mg;

   ii. The analytical balance shall be mounted on a heavy, shockproof table. The balance level shall be checked prior to each use and shall be adjusted as necessary;

   iii. The analytical balance shall be located in an area that is away from environmental laboratory traffic and is protected from sudden drafts and humidity changes;

   iv. The balance temperature shall be equilibrated with room temperature;

   v. The interior of the balance housing shall be kept clean and free from spillage of corrosive chemicals on the pan or inside the balance case;

   vi. The accuracy of each analytical balance shall be checked once a month using at least two class "S" weights, one in the gram range (five g - 50 g) and one in the milligram range (10 mg - 500 mg). The nominal values of the weight checked, observed weight values to the nearest 0.1 mg, dates on which checks were performed, analyst signature, and other pertinent information shall be recorded in a log book; and

   vii. Each analytical balance shall be checked and adjusted annually by a service person employed by the environmental laboratory, or by a balance consultant and a notation recorded in the weight check log book. A balance which malfunctions between annual checks must be serviced before being used again.

2. Top-loader or pan balances shall meet the following requirements:

   i. Balances shall be clean and not corroded;

   ii. Balances shall tare out and detect a weight of 100 mg when used for general media preparation;

   iii. Top loader and pan balances shall be checked monthly against two class "S" weights within the range of use, and a record shall be made of each calibration check in a log book, signed and dated by the analyst; and

iv. Each top loader and pan balance shall be checked and adjusted annually by a service person employed by the environmental laboratory, or by a balance consultant and a notation recorded in the weight check logbook. A top loader or pan balance which malfunctions between annual checks shall be serviced before being used again.

3. The laboratory shall operate pH meters in accordance with the manufacturer's instructions and the following requirements:

i. The accuracy shall be within ±0.05 pH units;

ii. The scale readability shall be ±0.05 pH units;

iii. Both indicating and reference electrodes shall be rinsed with reagent water after each reading;

iv. Samples shall be stirred during measurement at a constant rate, minimizing the air transference at the air water interface of sample;

v. Electrodes shall be stored according to the manufacturer's recommendations;

vi. The meter shall be capable of temperature compensation;

viii. All pH meters shall be calibrated each day of use. This shall include calibration with two standard pH buffers bracketing the value to be measured. After calibration, a standard buffer with pH within the calibration range shall be measured without any control adjustments to check the calibration. All calibration and check data shall be recorded in a log book, signed, and dated by the analyst. When the pH meter is in use for longer than a 3 hour period, the pH of the third buffer shall be checked once every three hours. If the pH differs by more than ±0.2 pH units from the standard buffer value, the meter shall be recalibrated; and

viii. Discard pH buffer calibration aliquots after each use.

4. Continuous pH monitoring devices shall be operated in accordance with the manufacturer's instructions and the following requirements:

i. The accuracy shall be within ±0.1 pH units;

ii. The scale readability shall be ±0.1 pH units;

iii. A strip chart recorder or electronic equivalent shall be used;

iv. Continuous pH monitoring devices shall be calibrated weekly, at a minimum, using one of the following procedures:

(1) Direct Calibration: The electrode shall be calibrated at a minimum of two points that bracket the expected pH of the water/waste and are approximately three pH units or more apart. A record shall be made of each calibration in a log book, signed and dated by the analyst; or

(2) Indirect Calibration: Collect a grab sample of the flowing material from a point as close to the electrode as possible and record the reading. Measure the pH of this grab sample as quickly as possible (within 15 minutes) with a laboratory-type pH meter that has been calibrated prior to use against two buffers as stated in N.J.A.C. 7:18-3.3(a)3vii. Calculate the difference between the two readings. Add or subtract the difference (depending on whether the laboratory meter reading is higher or lower than the continuous monitor reading) to the current reading of the continuous monitor by adjusting its calibration control. Make a record of each calibration in a log book, and have the record signed and dated by the analyst; and

v. Discard pH buffer calibration aliquots after each use.

5. Temperature-monitoring devices shall meet the following requirements:

i. Temperature monitoring devices shall be graduated in at least 0.5 degrees Celsius increments for all analyses except fecal coliform analysis which shall be graduated in at least 0.2 degrees Celsius;

ii. Continuous temperature-monitoring devices shall be accurate to ±0.5 degrees Celsius;

iii. The liquid column of glass thermometers shall have no separation;

iv. A NIST certified thermometer graduated in at least 0.2 degrees Celsius increments shall be available at all times for use by the certified environmental laboratory covering the complete range for all analyses for which the laboratory is certified and shall be calibrated at appropriate points at or near the critical temperature or range for the temperature being measured. A certificate must accompany the certified thermometer with matching identification number; and

v. The accuracy of all thermometers used to monitor temperatures shall be verified over the range used by comparing the readings of such thermometers with the readings of a NIST certified thermometer in the temperature ranges for which they will be used. A record shall be made containing the identification number of each thermometer, the temperatures displayed on the certified thermometer and the thermometer being verified, correction factors when applicable, dates on which quality control checks were performed, and the name of the analyst performing such checks. Glass thermometers shall be verified yearly and metal thermometers or thermocouples or infra-red temperature measuring devices shall be verified quarterly and the data recorded in a log book, signed and dated by the analyst.

6. Conductivity meters, shall be readable in ohms-cm or mhos/cm, have a range of 2 to 20,000,000 ohms-cm or equivalent mhos/cm and an accuracy of ±1 percent;

i. Conductivity cells shall have platinum electrodes or be calibrated using a meter with platinum electrodes;

ii. Conductivity meters shall be capable of temperature compensation; and

iii. An initial five point calibration curve shall be established using potassium chloride solutions of various concentrations to cover the necessary range. A single potassium chloride standard shall then be used as a check standard whenever specific conductance measurements are made. The cell constant must be determined and all calculations recorded annually in a log book, signed and dated by the analyst.

7. Refrigerators used to store samples, standards or laboratory reagents shall meet the following criteria:

i. A household refrigerator may be used for storage of aqueous reagents and samples. For storage of organics and flammable materials, an "explosion proof" refrigerator shall be used. Refrigerators shall maintain an internal temperature between one and five degrees Celsius (34 to 41 degrees Fahrenheit). Thermometers shall be immersed in a container filled with a liquid and placed on one of the shelves of each refrigerator being used to store regulatory samples. The specific temperature of the refrigerator should be at the level necessary to support the handling and preservation requirements of the analytical method or the sample preservation tables of the Code of Federal Regulations incorporated by reference into this chapter; and

ii. The temperature of all refrigerators used for storage of samples, standards, and environmental laboratory reagents shall be monitored daily and recorded in a permanent log book, signed and dated by the analyst. Corrective action shall be taken and appropriate notation made in the log whenever temperatures fall outside the range specified in (a)7i above.

8. Environmental laboratory glassware, plasticware and metal utensils shall meet the following requirements:

i. Beakers, flasks and other general environmental laboratory glassware shall be made of borosilicate glass that is resistant to damage by heat, chemicals and repeated use. The laboratory shall use only Class "A" volumetric glassware, and need not calibrate it before use;

ii. Unless otherwise specified, borosilicate bottles shall be used for the storage of reagents and standard solutions;

iii. Polyethylene bottles may be used where appropriate for storage of reagents and standard solutions;

iv. Serological or Mohr-type pipets are not volumetric pipets and shall not be used in tests or analysis requiring quantitative sample transfer and measurement;

v. When small quantities of analytical reagents are required to be measured, serial dilutions using class "A" glassware shall be performed. Automatic or digital type pipets shall be calibrated for accuracy and precision on a quarterly basis using reagent water and

an analytical balance. Digital pipets shall meet the specifications of Class "A" pipets. The calibration record shall be recorded in a logbook and the record signed by the analyst;

vi. Glassware and metal utensils shall be resistant to the effects of corrosion, high temperatures, and vigorous cleaning operations;

vii. Flasks, beakers, dilution bottles, culture dishes, culture tubes and other glassware shall be free of chips, cracks, and excessive etching;

viii. Plastic items shall be made of clear, inert, nontoxic materials;

ix. Metal utensils shall be made of stainless steel; and

x. All glassware shall be washed in a warm detergent solution and thoroughly rinsed first in tap water and then in reagent water. If a specific analytical method requires more stringent cleaning procedures, the cleaning procedures given in the analytical method shall be performed.

9. A source of water that meets the required standards of quality for each type of testing shall be available for use in the preparation of reagents, standards, and for glassware rinsing. If the water of the required quality is not produced in the environmental laboratory, it shall be purchased from commercial suppliers. The environmental laboratory shall maintain a file of the required analysis for each lot of water. A source of purified water is not necessary for radon/radon progeny-in- air analyses.

10. A gravity convection drying oven or infrared drying lamp shall be capable of maintaining stable drying temperatures.

11. Glass or plastic desiccators shall be used as specified by the analytical method.

12. Hot plates shall have temperature controls.

SUBCHAPTER 4 MICROBIOLOGICAL TESTING

7:18-4.1 Scope

(a) This subchapter applies to certified environmental laboratories when performing microbiological testing on regulatory samples, and to other laboratories performing microbiological testing on PT samples to become certified. This subchapter applies to microbiological testing for parameters in the following categories:

1. Categories DW01 and DW02, Microbiology and Parasitology and Molecular Microbiology;

2. Categories NPW01 and NPW02, Microbiology and Parasitology and Molecular Microbiology; and

3. Category SCM01, Microbiology.

(b) A laboratory qualifying for certification to perform total coliform analysis on samples for compliance with the Department's Bureau of Safe Drinking Water program shall concurrently qualify to perform fecal coliform and/or E. Coli analyses so that the presence or absence of either in a drinking water sample can be determined and reported within the time limits specified in N.J.A.C. 7:18-4.6(k).

(c) In addition to satisfying the applicable requirements of N.J.A.C. 7:18- 1 through 3, a laboratory performing microbiological testing within the scope of (a) above shall follow:

1. All applicable requirements in this subchapter; and

2. All requirements specified in the applicable DSAMs, including without limitation any requirements that are more stringent than the requirements in this subchapter.

7:18-4.2 Requirements for environmental laboratory equipment, supplies and materials

(a) The supervisor shall have control over the equipment, supplies and materials used in microbiological testing. The equipment, supplies and materials shall meet the requirements of N.J.A.C. 7:18-3, the applicable DSAM, and the following:

1. Air or water-jacketed incubators, aluminum block incubators, and water baths shall meet the following requirements:

i. Incubators and water baths shall be sized to accommodate periods of peak workload;

ii. Incubators and water baths must maintain internal temperatures as specified in the analytical method being performed;

iii. When aluminum block incubators are used, culture dishes and tubes shall fit snugly within the block;

iv. The water bath shall be equipped with a calibrated temperature monitoring device graduated in increments of at least 0.2 degrees Celsius; and

v. Whenever an air incubator is in use, a calibrated temperature monitoring device with its sensor or bulb immersed in liquid shall be placed on the topmost and bottommost shelf in use within the incubator. If only one shelf in the incubator is in use, the calibrated temperature monitoring device shall be placed on that shelf.

2. Autoclaves shall meet the following requirements:

i. The autoclave shall be in good operating condition when observed during its operational cycle or when time temperature charts are read;

ii. The autoclave shall be equipped with an accurate temperature monitoring device and a working safety valve;

iii. The autoclave shall be equipped with an accurate pressure gauge, unless the laboratory has documentation from the manufacturer of the autoclave certifying that the equipment will operate safely without a pressure gauge;

iv. The autoclave shall reach the sterilization temperature of 121 degrees Celsius, maintain that temperature throughout the sterilization period, and complete the autoclave cycle in no more than 45 minutes when a 12-15 minute sterilization period is used for culture media; and

v. During depressurization, the autoclave shall not produce air bubbles in the fermentation media.

3. Hot air ovens shall meet the following requirements:

i. The hot air oven shall be able to maintain a stable sterilization temperature of 170-180 degrees Celsius for at least two hours;

ii. Hot air ovens shall be used for sterilization of glass pipets, bottles, flasks, culture dishes, and other laboratory glassware and utensils; and

iii. A calibrated temperature monitoring device in increments no larger than 10 degrees Celsius with its sensor or bulb placed in sand shall be placed on one of the shelves in use within the hot air oven.

4. Optical, counting, and lighting equipment shall meet the following requirements:

i. At least one low-power magnification device with 10 to 15x magnification, for use in counting membrane filtration colonies;

ii. A fluorescent light source for use in counting total coliform MF colonies;

iii. A mechanical hand tally for use in counting bacteria colonies; and

iv. A colony counter, dark field model, to count Heterotrophic Plate Count colonies.

5. Inoculation equipment shall meet the following requirements:

i. The diameter of inoculation loops shall be at least 3 mm and the loops shall be constructed of 24 to 26 gauge Nichrome, chrome, or platinum- iridium wire;

ii. Either single-service metal inoculation loops, pre-sterilized plastic inoculation loops, or reusable metal inoculation loops shall be used; and

iii. Disposable dry-heat-sterilized hardwood applicator sticks may be used.

6. Membrane filtration (MF) equipment shall meet the following requirements:

i. Units used in MF procedures shall be made of stainless steel, glass, or autoclavable plastic;

ii. MF equipment shall not leak and shall not be corroded; and

iii. Field equipment may be used for coliform and all bacterial analysis using the membrane filter procedure; however, standard laboratory MF procedures must be followed when using field equipment.

7. Membrane filters and pads shall meet the following requirements:

i. Membrane filters shall be manufactured from cellulose ester materials, and shall be white, grid-marked, and have a 47 millimeter diameter and 0.45 micrometer (μm) pore size; however, another pore size may be used when the performance data provided by the manufacturer show the performance of that pore size to be equal to or better than the performance of the 0.45 μm membrane filter; and

ii. Membrane filters and pads shall be either autoclavable or presterilized.

8. Pipets shall meet the following requirements:

i. Sterile, glass or plastic pipets shall be used for measuring quantities of 10 milliliters or less; and shall be accurate within a 2.5 percent tolerance or less;

ii. Glass pipets shall be made of borosilicate glass; and

iii. Pipets shall not be excessively etched, mouthpiece or delivery tips shall not be chipped, and graduation marks shall be legible.

9. Pipet containers shall meet the following requirements:

i. Open packs of disposable sterilized pipets shall be resealed after each use; and

ii. Pipet containers shall be made of aluminum or stainless steel or individual pipets shall be wrapped in char-resistant paper.

10. Culture dishes shall meet the following requirements:

i. Sterile plastic culture dishes with tight or loose lids, or glass culture dishes with loose lids shall be used; and

ii. When culture dishes with loose lids are used, the relative humidity in the incubator shall not be less than 90 percent.

11. Culture dish containers shall meet the following requirements:

i. Culture dish containers shall be made of either aluminum or stainless steel, or the culture dishes shall be wrapped in heavy aluminum foil or char-resistant paper; and

ii. Open packs of disposable sterile culture dishes shall be resealed after each use.

12. Culture tubes and closures shall meet the following requirements:

i. Culture tubes shall be made of borosilicate glass or other corrosion resistant glass and shall be of a sufficient size to contain both the culture medium and the sample portions to be tested, without being more than three-quarters full; and

ii. Caps should be made of snug-fitting stainless steel or plastic; however, loose-fitting aluminum caps or screw caps with non-toxic liners are also acceptable.

7:18-4.3 Required use of DSAMs

(a) In performing microbiological analysis of a regulatory sample (including, without limitation, analysis of a PT sample by a laboratory that is applying to become certified), a laboratory shall use only:

1. A DSAM from the applicable Category listed in N.J.A.C. 7:18-4.1(a) for which the laboratory is certified or is applying to become certified; or

2. An ATP approved by the Department for the laboratory and, if applicable, for the facility in question.

(b) The requirements of (a) above do not apply to the analysis of a non-regulatory sample, if the requirements of N.J.A.C. 7:18-2.22(b) are satisfied.

7:18-4.4 Requirements for general environmental laboratory practices

(a) A laboratory performing microbiological analysis shall practice and meet the requirements listed in (a)1 through 4 below.

1. The laboratory shall follow sterilization procedures meeting the following requirements:

i. The times for autoclaving materials at 121 degrees Celsius are listed below. Except for membrane filters and pads and carbohydrate-containing media, indicated times are minimal times which may necessitate adjustment depending upon volumes, containers, and loads;

MATERIAL	TIME (MINUTES)
Membrane filters and pads	10
Carbohydrate-containing media (lauryl tryptose, brilliant green lactose bile broth, etc.)	12-15
Contaminated materials and discarded tests	30
Membrane filter assemblies (wrapped), sample collection bottles (empty), individual glassware items	15
Rinse water	15
Dilution water blanks	15

ii. Membrane filter assemblies shall be sterilized at the start of the first filtration series, either by autoclaving in accordance with (a)1i above, or by two minutes of exposure in an ultraviolet sterilizer unit. The laboratory shall not use the ultraviolet sterilizer unit if its use affects the validity of the results. The laboratory shall test the ultraviolet lamps quarterly with a light meter and a spread plate irradiation test. The laboratory shall not reuse a filtration unit without sterilizing it if 30 minutes or more has elapsed since the last sample was filtered; and

iii. If glassware is sterilized in a hot air oven, the temperature shall be held at 170 degrees Celsius for a minimum of two hours.

2. The laboratory shall use only laboratory pure water that:

i. Has been tested by a certified environmental laboratory certified to perform the required chemical analysis for testing of the laboratory pure water; and

ii. Meets the requirements in Table 4.1 at N.J.A.C.7:18-4.5(c)4.

3. The laboratory shall use only rinse water and dilution water that meets the following requirements:

i. Stock buffer solution shall be prepared in accordance with the DSAM or EPA Microbiological Methods, using laboratory pure water;

ii. Stock buffer shall be either autoclaved or filter-sterilized, and must be labeled, dated, and stored at 1 to 5 degrees Celsius;

iii. The stored buffer solution shall be free of turbidity; and

iv. Rinse and dilutions water shall be prepared by adding 1.25 milliliters of stock buffer solution and 5 milliliters of magnesium chloride solution (81.1 grams of magnesium chloride hexahydrate) per liter of laboratory pure water, and the final pH shall be 7.2±0.1.

4. The laboratory shall use only media that is prepared and stored in accordance with the following requirements:

i. All media shall be prepared according to the procedures for media preparation set out in the DSAM. However, lactose broth shall not be used;

ii. Dehydrated media containers shall be kept tightly closed and stored in a cool, dry location, to prevent discoloration and caking. Laboratories shall not use discolored or caked dehydrated media;

iii. Dissolution of the media using laboratory pure water shall be completed before dispensing to culture tubes or bottles;

iv. The membrane filter broth and agar media shall be heated in a boiling water bath or they may be heated on a hot plate if constantly agitated until completely dissolved;

v. MF broths shall be stored and refrigerated no longer than 96 hours and poured MF agar plates shall be stored, refrigerated and used within two weeks;

vi. MPN media prepared in tubes with loose-fitting caps shall be used within one week, but if MPN media are refrigerated after sterilization, they shall be incubated overnight at 35 degrees Celsius to confirm usability, and tubes showing growth or gas bubbles shall be discarded;

vii. Media in screw cap containers may be held up to three months, provided that the media are stored in an enclosed area so that no light may enter and evaporation does not exceed 10 percent of the original volume; in addition, commercially prepared liquid and agar media supplies may be used; and

viii. Ampule media shall be stored at one to five degrees Celsius (34 to 41 degrees Fahrenheit), and storage time shall be limited to the manufacturer's expiration date.

7:18-4.5 Requirements for quality assurance/quality control program

(a) The laboratory shall develop and keep current a quality assurance/quality control manual. The laboratory shall not perform analyses of regulatory samples without having a current quality assurance/quality control manual covering the analysis in question. In the manual, the laboratory shall describe the following:

1. The procedures that the laboratory will use in meeting the quality control requirements of this chapter and all applicable DSAMs, including but not limited to requirements pertaining to laboratory equipment, instrumentation and supplies; and

2. The frequency with which the laboratory will perform the procedures listed pursuant to (a)1 above.

(b) The laboratory shall develop and implement a written methods manual containing a standard operating procedure (SOP) for each DSAM, in accordance with the criteria and procedures of the DSAM and this chapter. A laboratory shall not perform analyses using a DSAM unless it has developed and implemented such an SOP for the DSAM.

1. The laboratory shall update the manual to reflect any changes in the procedures practiced by the laboratory.

2. The laboratory shall keep copies of the methods manual in the immediate bench area of personnel engaged in the analysis of samples and related procedures within the Microbiological Testing Categories.

3. In the manual, the laboratory shall properly designate by revision number and date the standard operating procedure (SOP) for a specified analytical method for a particular type of analysis.

4. Changes to SOPs are effective only if:

   i. The change is made by the manager, supervisor or quality assurance officer of the laboratory; and

   ii. The manager, supervisor or quality assurance officer makes the change in writing, signed and dated by the manager, supervisor or quality assurance officer.

5. The laboratory shall make manufacturers' instruction manuals and any applicable regulations readily available to laboratory personnel at all times. Textbooks may be used to supplement written instructions, but may not be used in lieu thereof.

(c) A laboratory performing microbiological analyses shall conduct the quality control checks specified in the applicable DSAMs, and the following additional checks:

1. When the laboratory finds no positive samples for a certified method within a calendar quarter, the laboratory shall run a positive control sample for that method;

2. For each sample filtration series, the laboratory shall conduct a start and finish MF sterile control test of rinse water, media and supplies, using sterile rinse water as the sample. If the MF sterile control tests indicate contamination, then all data from the affected samples shall be rejected and the laboratory shall request immediate resampling of those waters involved in the laboratory error;

3. The laboratory shall complete the MPN test for drinking water samples on 10 percent of positive confirmed total coliform samples, except that gram staining need not be performed. However, if no positive tubes result from the tested drinking water samples, the laboratory shall complete the MPN test (and need not perform gram staining) quarterly on at least one water source for which results have been positive;

4. The laboratory shall cause its laboratory pure water to be tested, using approved methods, in accordance with (c)4i through v below.

   i. The testing may be performed by the laboratory preparing the water, by another certified environmental laboratory, or by the manufacturer of the water if the laboratory purchases its laboratory pure water. If the laboratory purchases its laboratory pure water, it shall have each lot or batch of the water tested. Otherwise, the laboratory shall have its laboratory pure water tested at the frequency specified in Table 4.1 below;

ii. If the source water is chlorinated, the laboratory shall test the water for total residual chlorine using the DPD method. If the source water is not chlorinated, the laboratory need not test it for residual chlorine;

iii. The pour plate method (Method 9215B in SM18) shall be used to determine the heterotrophic plate count;

iv. In testing the bacteriological quality of the water, the laboratory shall use the methods described in SM18 or in EPA Microbiological Methods, p.200. The control water for testing bacteriological quality is double distilled water using a glass still; and

v. If the laboratory pure water does not meet the criteria set forth in Table 4.1 below, then the laboratory shall take action immediately to correct all failures to meet the criteria, and shall continue taking corrective action until a retest of the water shows that it meets the criteria.

TABLE 4.1
Requirements for Laboratory Pure Water

PARAMETER	LIMITS	FREQUENCY
Conductivity	>0.5 megohms resistance or <2 micromhos/cm at 25°C	Monthly
Lead, Cadmium, Chromium, Copper, Nickel and Zinc	Not greater than 0.05 mg/L per parameter. Collectively, no greater than 0.1mg/L	Annually
Total Chlorine, Residual	Nondetectable	Monthly
Heterotrophic Plate Count	<500/milliliter	Monthly
Bacteriological Water Quality	Ratio 0.8-3.0	Annually

5. Each certified environmental laboratory shall satisfactorily analyze one unknown PT sample per year, when available from a Department-approved PT sample provider, for the parameters within the Categories for which the environmental laboratory has received certification;

6. Any certified environmental laboratory analyzing samples for a public water facility shall examine a minimum of one positive control sample per month in addition to analyzing the required number of distribution samples and records maintained;

7. The laboratory shall record the temperature of air or water-jacketed incubators and water baths at least twice daily, with at least four hours between readings;

8. The laboratory shall record the contents, date, time, and temperature for each sterilization cycle of the autoclave;

9. The laboratory shall maintain records of hot air ovens showing the contents, date, time and temperature of each sterilization cycle;

10. The laboratory shall use only membrane filters that have been recommended or approved by the manufacturer for use in the analysis of water;

11. When the laboratory first uses a detergent or washing product, or changes the brand or type of washing product it uses, the rinsing process shall demonstrate that the detergent or washing product provides glassware free of toxic material by the inhibitory residue test as set forth in SM18 or in EPA Microbiological Methods, p.199;

12. The laboratory shall check each batch of rinse water for sterility. The laboratory shall add 50 milliliters of water to a 50 milliliter volume of a double-strength non- selective broth (e.g. tryptic soy, tripticase soy or tryptone broth) and then incubating the preparation at 35 ± 0.5 C for 24 hours. At the end of the incubation period, the laboratory shall check the preparation for growth, and record the results. If bacterial growth is observed, the batch shall be discarded and a new batch prepared;

13. The laboratory shall check at least one sample container from each batch of laboratory sterilized sample containers or at least one sample container from each batch or lot of purchased sterile containers. The laboratory shall add approximately 25 milliliters of sterile non-selective broth to the container or containers being checked, and incubate the preparation at 35 degrees ±0.5 degrees Celsius for 24 hours. At the end of the incubation period, the laboratory shall check the container for growth, and record the results. If bacterial growth is observed, the batch shall be resterilized and the results recorded;

14. The laboratory shall maintain annual service contracts or internal protocols on balances, autoclave, water still, and any other equipment requiring periodic servicing. The laboratory shall enter records of actual servicing in a log book. The laboratory shall make these contracts, protocols and service records available to the Department during inspections or upon the Department's request.

15. The laboratory shall maintain records of preparation of each batch of sterilized media. In the records, the laboratory shall include the lot number of the batch, date of preparation, sterilization time and temperature, final pH of each batch, and the preparing technician's name. The laboratory shall make these records available to the Department during inspections or upon the Department's request;

16. The laboratory shall label each bottle of dehydrated media with the date of receipt, and the date on which the bottle is first opened. The laboratory shall not use the media more than six months after it is first opened, provided however, that if the bottle is stored in a desiccator the media may be used for 12 months after it is first opened;

17. The laboratory shall record the lot number of packages of membrane filters and date of receipt;

18. The laboratory shall use heat-sensitive tapes, spore strips, spore ampules or a maximum registering thermometer during each autoclave cycle;

19. The laboratory shall label all reagents and solutions to identify them and indicate other information pertinent to identification, such as (when applicable) strength or concentration, storage requirements, preparation date, expiration date, and other information pertinent to identification; and

20. The laboratory shall not use any caked or discolored media, or any media that has exceeded the manufacturer's expiration date. The laboratory shall discard such media immediately.

7:18-4.6 Requirements for records and data reporting

(a) The laboratory shall retain records concerning microbiological analyses. The records to be retained include raw data records, quality control data records (including records of all quality control checks under N.J.A.C. 7:18-4.5(c)), chain-of-custody forms, laboratory reports, and the information required under (d) below. The laboratory shall retain each record for at least five years after the date of the analysis, provided however, that the laboratory shall retain records of analyses for 10 years if the person requesting the analyses has informed the laboratory that the analyses were to be performed because of epidemiological or public health concerns.

(b) The laboratory shall file and maintain data and other records in an accessible location on the laboratory's premises for one year after the date of analysis so that reviews can be conducted during on-site audits.

(c) The laboratory shall not accept custody of regulatory samples unless a chain-of-custody form is submitted with the samples, in accordance with N.J.A.C. 7:18-9.2(c)9.

1. Before accepting custody of a regulatory sample, the laboratory shall determine that the sample is properly labeled and has met the handling and preservation requirements. If the sample fails to meet those requirements, the laboratory shall indicate that failure on the chain-of-custody section of the sample request form or the chain-of-custody form;

2. The laboratory's sample custodian accepting responsibility for the sample shall sign the chain-of-custody form;

3. The laboratory shall have an internal chain-of-custody procedure or an alternate sampling tracking procedure which establishes a sample's integrity and completely tracks its custody during its lifetime in the laboratory; and

4. If the analysis was not performed at the environmental laboratory that first received the sample, the chain-of-custody form shall include the name, address and identification number of the New Jersey certified environmental laboratory to which the sample was forwarded.

(d) The laboratory shall retain the following information as part of the records of analysis:

1. The assigned laboratory sample number or other unique form of identification;

2. The date and time of sample analysis;

3. The name and signature of the person or persons who performed the analysis;

4. The type of analysis performed and the DSAM used; and

5. The results of the analysis and the raw data generated by the analysis.

(e) The laboratory shall satisfy the following requirements in reporting results using the membrane filter (MF) procedure:

1. For microbiological testing other than total coliform in drinking water, if there is confluent growth, with or without typical discreet colonies covering the entire filtration area of the membrane, the laboratory shall report the results as "confluent growth per 100 milliliters with (or without) the organism for which the sample was tested (e.g., fecal coliform, fecal streptococci, etc.)." The laboratory shall also request a new sample; and

2. When the total number of bacterial colonies on the membrane is greater than 200 total colonies, or is not sufficiently distinct, or both, the laboratory shall report the results as "too numerous to count (TNTC) per 100 milliliters with (or without) the organism for which the sample was tested (e.g., fecal coliform, fecal streptococci, etc.)." The laboratory shall also request a new sample.

(f) Pending membrane filtration (MF) verification or most probable number (MPN) completion, the laboratory shall report positive results for drinking water samples as preliminary. After MF verification or MPN completion, the laboratory shall report the final results to the client.

(g) The laboratory shall check all results reported on final report forms against original data to make sure there are no transcription errors.

(h) The laboratory shall include the following information in reporting results to the client:

1. The certified environmental laboratory name and New Jersey laboratory identification number;

2. The date, time, and location of sample collection;

3. The type of analysis performed and the analytical method employed;

4. The results generated by the analysis; and

5. The name and signature of the environmental laboratory manager or designee identified under N.J.A.C. 7:18-2.11(a)iii.

(i) The laboratory shall not report results of analyses to the Department or to any other person unless the original or true duplicate of the results is sent to the client. The report shall be signed by the laboratory manager or designee identified under N.J.A.C. 7:18-2.11(a)iii.

(j) The laboratory shall not refer samples to another laboratory for analysis, unless the other laboratory is also a certified environmental laboratory. The laboratory requesting the analysis shall provide the results to the client, on the original or true duplicate forms from the certified environmental laboratory that performed the analysis, containing the New Jersey environmental laboratory identification number of the certified environmental laboratory that performed the analysis.

(k) When the laboratory determines the presence of fecal coliform or E. Coli in a drinking water sample, pursuant to 40 CFR 141.63(b), the laboratory shall notify the affected parties as follows:

1. For non-transient non-community and transient non-community water systems, the laboratory shall notify the water purveyor and the municipal health agency (or, if there is no municipal health agency for the municipality in question, the county health agency) within 24 hours or during the next business day; or

2. For community water systems, the laboratory shall notify the water system's superintendent and the Department's Bureau of Safe Drinking Water within 24 hours or during the next business day.

(l) If the laboratory discovers an error in the analysis of a regulatory sample, and the error may affect the validity of the reported analytical result, the environmental laboratory manager shall report the error to the regulatory program for which the analysis was conducted, and to the client. The laboratory shall make this notification within 72 -hours after discovery of the error.

(m) When the laboratory determines the presence of total coliform in a sample collected for conformance with the PWTA, the laboratory shall:

1. Conduct a coliform verification test for Fecal coliform or *E. Coli* on the same sample culture that the total coliform positive was determined; and

2. Where the presence of Fecal coliform or *E. Coli* is detected in accordance with (m)1 above, the laboratory shall notify both the client requesting such analysis and the local health authority within 24 hours or the next business day, whichever is sooner.

SUBCHAPTER 5 CHEMICAL TESTING

7:18-5.1 Scope

(a) This subchapter applies to certified environmental laboratories when performing chemical testing on regulatory samples, and to other laboratories performing chemical testing on PT samples to become certified. This subchapter applies to chemical testing for parameters in the following categories:

1. Air and Emissions:

   i. Category AE01: Inorganics – Non-Metals Analysis;

   ii. Category AE02: Inorganics – Metals Analysis;

   iii. Category AE03: Asbestos Analysis;

   iv. Category AE04: Organics Analysis;

   v. Category AE06: Air – Laboratory Developed and/or Non-Standard Method; and

   vi. Category AE07: Air Sample Collection.

2. CERCLA-CLP Program:

   i. Category CLP01: NPW – Multi-Concentration Inorganics;

   ii. Category CLP02: NPW – Multi-Concentration Organics;

   iii. Category CLP03: NPW – Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans;

   iv. Category CLP04: SCM - Multi-Concentration Inorganics;

   v. Category CLP05: SCM – Multi-Concentration Organics; and

   vi. Category CLP06: SCM - Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans.

3. Drinking Water Matrix:

   i. Category DW03: Inorganic Parameters;

   ii. Category DW05: Asbestos Analysis;

   iii. Category DW06: Metals;

   iv. Category DW07: Metals – ICP, ICP/MS and DCP;

   v. Category DW08: Organic Parameters - Chromatography;

   vi. Category DW09: Organic Parameters –Chromatography/MS;

   vii. Category DW12: Drinking Water Sample Collection; and

viii. Category DW13: Drinking Water – Laboratory Developed and/or Non-Standard Methods.

4. Solid and Chemical Materials Matrix:

i. Category SCM02: Characteristics of Hazardous Waste and Physical Analyses;

ii. Category SCM03: Inorganic Parameters and Preparation;

iii. Category SCM04: Asbestos Analysis;

iv. Category SCM05: Metals – SCM Preparation Methods;

v. Category SCM06: Metals;

vi. Category SCM07: Metals – ICP, ICP/MS and DCP;

vii. Category SCM08: Organics – SCM Preparation and Screening Methods;

viii. Category SCM09: Organic Parameters - Chromatography;

ix. Category SCM10: Organic Parameters – Chromatography/MS;

x. Category SCM11: Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans;

xi. Category SCM13: SCM Sample Collection; and

xii. Category SCM14: SCM – Laboratory Developed and/or Non-Standard Methods.

5. Non-Potable Water Matrix:

i. Category NPW03: Inorganic Parameters;

ii. Category NPW05: Asbestos Analysis;

iii. Category NPW06: Metals – NPW Preparation Methods;

iv. Category NPW07: Metals;

v. Category NPW08: Metals – ICP, ICP/MS and DCP;

vi. Category NPW09: Organics – NPW Preparation Methods;

vii. Category NPW10: Organic Parameters –Chromatography;

viii. Category NPW11: Organic Parameters – Chromatography/MS;

ix. Category NPW15: Non-Potable Water Sample Collection; and

x. Category NPW16: NPW – Laboratory Developed and/or Non-Standard Methods.

6. Biological Tissue Matrix:

i. Category BT01: Inorganic Parameters;

ii. Category BT02: Metals – BT Preparation Methods;

iii. Category BT03: Metals;

iv. Category BT04: Metals – ICP, ICP/MS and DCP;

v. Category BT05: Organics – BT Preparation Methods;

vi. Category BT06: Organic Parameters –Chromatography;

vii. Category BT07: Organic Parameters – Chromatography/MS; and

viii. Category BT08: BT – Laboratory Developed and/or Non-Standard Methods.

(b) In addition to satisfying the applicable requirements of N.J.A.C. 7:18-1 through 3, a laboratory performing chemical testing within the scope of (a) above shall follow:

1. All applicable requirements in this subchapter; and

2. All requirements specified in the applicable DSAMs, including without limitation any requirements that are more stringent than the requirements in this subchapter.

7:18-5.2 Requirements for environmental laboratory equipment and instruments

(a) The supervisor shall have control over the equipment and instruments used in chemical testing. The laboratory shall use only equipment and instruments that meets the applicable requirements listed in (a)1 through 17 below, the applicable requirements of N.J.A.C. 7:18-3, and the requirements of the applicable DSAM.

1. Spectrophotometers (other than atomic absorption spectrophotometers) shall meet the following requirements:

i. The spectral range shall be at least 400 to 700 nanometers (nm). The maximum spectral bandwidth shall be no more than 20 nm;

ii. Wavelength accuracy shall be within 2.5 nm; and

iii. Spectrophotometers shall employ a cell path length permitting a linear calibration of the instrument in the anticipated concentration range consistent with the DSAM.

2. Filter photometers or colorimeters shall meet the following requirements:

i. Filter photometers or colorimeters shall have filters that isolate various radiant energy bands in the 400-700 nm range. The filters shall have bandwidth between 10 and 70 nm; and

ii. Filter photometers and colorimeters shall employ a cell path length permitting a linear calibration the instrument in the anticipated concentration range consistent with the DSAM.

3. Atomic absorption spectrophotometers shall meet the following requirements:

   i. Atomic absorption spectrophotometers shall be single or multiple channel, single or double beam instruments having a grating monochromator, photomultiplier detector, adjustable slits, and provisions for interfacing with an analog/digital chart recorder/printer or a computer data system;

   ii. If used, a computer data system shall perform analog-digital conversions with integration, storage, and output. The laboratory shall produce completed header information for the computer system to define the unique sample, blank or standard run; date/time of analysis; analyst; parameter(s) concentrations, and or absorbance values;

   iii. The instruments shall be operated with the fuel and oxidant gases specified by the analytical method;

   iv. Instruments used to analyze metals as hydrides shall:

      (1) Have a hydride generator that meets the specifications of the applicable DSAM; and

      (2) Be able to meet the temperature and background correction requirements of the applicable DSAM.

4. For mercury analysis, a mercury analyzer or an atomic absorption spectrophotometer used for mercury analysis shall meet the following requirements:

   i. The laboratory shall operate the instruments used for cold-vapor mercury analysis using the lamps specified by the applicable DSAM;

   ii. The laboratory shall use absorption cells that measure at least 10 centimeters (cm) and have 2.5 cm quartz end windows, or their equivalent;

   iii. The laboratory shall use a vapor flow system including an air pump delivering one liter per minute, a heated drying unit or a tube containing 20 grams of magnesium perchlorate, and an aeration tube with coarse glass-frit; and

   iv. Because of the toxic nature of mercury vapor, the laboratory shall take precautions to avoid subjecting individuals to inhalation of the vapor. Therefore, when the samples are analyzed, the released mercury vapor shall be passed through an absorbing media, such as equal volumes of 0.1 N potassium permanganate ($KMnO_4$) and 10 percent sulfuric acid (H_2SO_4), or 0.025 percent iodine in a 3 percent potassium iodide (KI) solution, or specially treated charcoal that will absorb mercury vapor.

5. Inductively coupled plasma (ICP) spectrometers shall meet the following requirements:

i. The laboratory's ICP instruments shall be computer-controlled;

ii. The system shall be capable of background correction; and

iii. The system shall include a computer data system that performs analog- digital conversions with integration, storage, and output. The laboratory shall produce completed header information for the computer system to define the unique sample, blank or standard run; the date and time of instrumental analysis; the analyst; and the parameter or parameters for which the sample is being analyzed.

6. Inductively coupled plasma/mass spectrometers (ICP/MS) shall meet the requirements applicable to ICP spectrometers under (a)5 above. The laboratory shall operate ICP/MS instrumentation using the mass spectrometer ionization conditions, scan range, and scan rate defined by the applicable DSAM, and shall meet the tuning criteria, initial and continuing calibration, quality assurance, and quality control requirements of the applicable DSAM.

7. Transmission electron microscopes and associated energy dispersive X-ray analyzers shall meet the requirements of the applicable DSAM.

8. Gas chromatographs shall meet the following requirements:

i. GC Column ovens shall be capable of isothermal temperature control;

ii. Injection systems, columns, and carrier gas flow control conditions shall meet the requirements of the applicable DSAM;

iii. Detectors shall meet the requirements of the applicable DSAM;

iv. Chromatograms shall be recorded with a strip chart recorder and integrator or combined recorder/ integrator or computer data system; and

v. The original hard copy of all chromatograms shall meet the requirements of (a)14 below.

9. Gas chromatograph/mass spectrometers (GC/MS) shall meet the requirements for gas chromatographs in (a)8 above, and the requirements for mass spectrometers under (a)13 below.

10. High performance liquid chromatographs (HPLC) shall meet the following requirements:

i. Isocratic and/or linear gradient elution chromatography shall be used;

ii. Fluorescence, UV or electrochemical detectors shall be used, as required by the applicable DSAM;

iii. Reverse-phase or other columns shall be used as prescribed by the applicable DSAM;

iv. Chromatograms shall be recorded with a strip chart recorder and integrator or combined recorder/ integrator or computer data system; and

v. The original hard copy of all chromatograms shall meet the requirements of (a)14 below.

11. High performance liquid chromatograph/mass spectrometers (HPLC/MS) shall satisfy the requirements for high performance liquid chromatographs in (a)10i, iii and iv above, and the requirements for mass spectrometers under (a)13 below.

12. Ion chromatographs shall meet the requirements defined by the DSAM including the following requirements:

i. Suppressor and separator or other columns shall be used as required by the applicable DSAM;

ii. Conductivity or other detector shall be used as required by the applicable DSAM;

iii. Chromatograms shall be recorded with a strip chart recorder and integrator or combined recorder/ integrator or computer data system; and

iv. The original hard copy of all chromatograms shall meet the requirements of (a)14 below.

13. Mass spectrometers under (a)9 and 11 above shall meet the following requirements:

i. Mass spectrometer instrumentation shall be operated using the ionization conditions, scan range, and scan rate, and shall meet the tuning criteria, initial and continuing calibration, quality assurance and quality control requirements of the applicable DSAM;

ii. The mass spectrometer shall have a computer data system for performing qualitative identifications and quantitative calculations for target compounds. It shall be capable of identifying and semi-quantitating "non-target" or tentatively identified compounds (TICs). The software shall use retention time and mass spectral comparisons for qualitative identifications. The software shall use a formula defined in the applicable DSAM to calculate quantitative results of target compounds;

iii. The computer data system shall be capable of performing a mass spectra search against the NIST library or other USEPA-approved mass spectral library. The data system shall rank and present the best three qualitative identification mass spectral matches. If a parameter cannot be specifically identified, but its compound class can be determined by mass spectral matching, its compound class shall be reported. If the compound class is indeterminate, the parameter shall be reported as an unknown. Semi- quantitative results for a non-target TIC shall be estimated by assuming that its concentration is proportional to that of the nearest internal standard;

iv. The laboratory's GC/MS analyst or supervisor shall independently confirm all software qualitative identifications for found parameters; and

v. The original hard copy of all chromatograms shall meet the requirements of (a)14 below.

14. The laboratory shall have the analyst sign the original hard copy of all chromatograms, analog or digital, prepared using any of the types of equipment listed in (a)8 through 12 above. In the original hard copy, the laboratory shall include a table setting forth all of the following information:

i. Identification of the sample, blank or standard;

ii. The date and time of the analysis;

iii. The run number; and

iv. Peak identification, by number, by retention time, or by name. The peak identification shall include internal standards, surrogates, and sample components.

15. Auto-analyzer equipment shall meet the requirements defined by the automated methods of the DSAMs including the following requirements:

i. The spectral range shall be at least a minimum of 400 to 700 nm. The maximum spectral bandwidth shall be no more than 20 nm;

ii. Wavelength accuracy shall be within 2.5 nm; and

iii. The laboratory shall have the analyst sign the original hard copy of all outputs. In all outputs, analog or digital, the laboratory shall include a table setting forth the following information: identification of the sample, blank or standard; the date and time of analysis; the run number; and peak identification.

16. Any burets used for titration shall be Class "A" burets, and need not be calibrated before use.

17. Dissolved oxygen (DO) meters with membrane electrodes shall meet the following requirements:

i. Dissolved oxygen measurements shall be accurate to within 0.3 mg dissolved oxygen per liter (DO/L) and shall be precise to within 0.15 mg DO/L; and

ii. Meters shall be capable of compensation for temperature.

18. At least annually, the laboratory shall check salinity meters equipped with conductivity cells having platinum electrodes. The check shall cover the range of interest using at least five concentrations of a standard potassium chloride solution. Conductivity cells not having platinum electrodes shall be checked against a conductivity meter equipped with platinum electrodes. The laboratory shall perform this check annually. The laboratory shall record the raw data, cell constant, and results in a logbook, with each entry signed and dated by the analyst.

19. The laboratory shall have documented procedures for the calibration and verification of air sampling equipment such as pumps, meter boxes, critical orifices, flow measurement devices and continuous analyzers, if this equipment is used or supplied by the laboratory.

20. All air sampling canisters shall be internally passivated by the SUMMA electropolish process, as set forth in the methodologies referenced at N.J.A.C. 7:18-1.5(a)5, or other EPA approved processes.

7:18-5.3 Required use of DSAMs

(a) In performing chemical analysis of a regulatory sample (including, without limitation, analysis of a PT sample by a laboratory that is applying to become certified), a laboratory shall use only:

1. A DSAM from the applicable Category listed in N.J.A.C. 7:18-5.1(a) for which the laboratory is certified or is applying to become certified; or

2. An applicable ATP approved by the Department pursuant to N.J.A.C. 7:18-2.20 for the laboratory and, if applicable, for the facility in question.

(b) The requirements of (a) above do not apply to the analysis of a non-regulatory sample, if the requirements of N.J.A.C. 7:18-2.22(b) are satisfied.

(c) If a laboratory applies for certification for an analytical method under the Clean Air Program that requires other analytical methods to be performed as part of the analysis, the laboratory shall also apply for certification for all of the required methods.

7.18-5.4 Requirements for general environmental laboratory practices

(a) A laboratory shall meet the following requirements with respect to laboratory chemicals, reagents and standards used in chemical testing:

1. The laboratory shall use analytical reagent grade (AR) chemicals;

2. The laboratory shall examine stock and working standard solutions weekly and before each use for signs of decomposition; including, but not limited to, discoloration, formation of precipitates and concentration change due to obvious evaporation. If the laboratory finds that a solution shows any such conditions, the laboratory shall discard the solution immediately;

3. The laboratory shall label all reagents and reagent solutions to indicate identity and, when applicable, titer, strength or concentration; recommended storage requirements, preparation date, expiration date, and any other pertinent information;

4. The laboratory shall immediately discard any reagent or reagent solution that is past its expiration date;

5. The laboratory shall use only standards of high purity for inorganic methods;

6. The laboratory shall mark all purchased chemicals, solutions, and standards with the date received by the laboratory and the date first opened by the laboratory;

7. If a DSAM requires the use of special purity solvents or reagents, a laboratory shall not perform an analysis pursuant to that DSAM using solvents or reagents of lesser purity;

8. The laboratory shall initially standardize prepared titrants. The laboratory shall restandardize such titrants at least quarterly. The laboratory shall restandardize purchased titrants at least quarterly. In standardizing or restandardizing a titrant, the laboratory shall use primary or secondary reagents as specified in the applicable DSAM;

9. The laboratory shall not use purchased standards or titrants unless they have a lot-specific certificate of analysis; and

10. The laboratory shall obtain or prepare calibration check standards and QC check samples from lots of materials different from those used to prepare calibration standards.

7:18-5.5 Requirements for quality assurance/quality control program

(a) The laboratory shall develop and keep current a quality assurance/quality control manual. The laboratory shall not perform analyses of regulatory samples without having a current quality assurance/quality control manual covering the analysis in question. In the manual, the laboratory shall describe the following:

1. The procedures that the laboratory will use in meeting the quality control requirements of this subchapter, N.J.A.C. 7:18-3, and all applicable DSAMs; including, but not limited to, requirements pertaining to laboratory equipment, instrumentation and supplies; and

2. The frequency with which the laboratory will perform the procedures listed pursuant to (a)1 above.

(b) The laboratory shall develop and implement a written methods manual containing a standard operating procedure (SOP) for each DSAM, in accordance with the criteria and procedures of the DSAM and this chapter. A laboratory shall not perform analyses using a DSAM unless it has developed and implemented such an SOP for the DSAM.

1. The laboratory shall update the manual to reflect any changes in the procedures practiced by the laboratory.

2. The laboratory shall keep copies of the methods manual in the immediate bench area of personnel engaged in the analysis of samples and related procedures within the Chemical Testing Categories.

3. In the manual, the laboratory shall properly designate by revision number and date the standard operating procedure (SOP) for a specified analytical method for a particular type of analysis.

4. Changes to SOPs are effective only if:

i. The change is made by the manager, supervisor or quality assurance officer of the laboratory; and

ii. The manager, supervisor or quality assurance officer makes the change in writing, signed and dated by the manager, supervisor or quality assurance officer.

5. The laboratory shall make manufacturers' instruction manuals and any applicable regulations readily available to laboratory personnel at all times. Textbooks may be used to supplement written instructions, but shall not be used in lieu thereof.

(c) A laboratory performing chemical testing shall conduct the quality control checks specified in the applicable DSAMs, and the following additional checks:

1. The laboratory shall calibrate dissolved oxygen instruments against air or air saturated water before each use or weekly, whichever is less frequent. The laboratory shall test dissolved oxygen instruments weekly using the Winkler method (azide modification) 4500-OC set forth in SM-18 or ASTM method D88-92(A), or another Winkler method promulgated by the USEPA.

2. The laboratory shall calibrate standards incorporated in visual comparison devices at least once every six months. The laboratory shall maintain records of the date and method of each such calibration in accordance with N.J.A.C. 7:18-5.6. The laboratory shall prepare visual calibration standards according to the applicable DSAM. The laboratory shall plot concentrations of the calibration standards against those of the incorporated standards, and calculate a correction factor. The laboratory shall document this correction factor and apply it to all future results until the factor is redetermined at the next six-month interval;

3. The laboratory shall check the wavelength setting of each spectrophotometer at least annually, by comparing the wavelength setting to the absorption maxima of colored standards or filters such as didymium glass. For each check, the laboratory shall record in a logbook the date on which it performed the check, the wavelength observed, and the correction factor. The record shall include the analyst's signature;

4. The laboratory shall prepare calibration curves used in the spectrophotometric analysis and ion-selective electrode analysis of inorganic parameters as follows:

i. When using new calibration standards or quarterly, the laboratory shall prepare new calibration curves consisting of at least one reagent blank and five standards. The calibration coefficient shall be >0.995;

ii. The laboratory shall verify the calibration curve with the calibration check standard daily or after every 20 samples, whichever is more frequent. For analyses under the Drinking Water Program, the laboratory shall use a calibration check standard with a concentration at or near the maximum contaminant level (MCL). For analyses under other regulatory programs, the laboratory shall use a calibration check standard with a concentration at or near the middle of the concentration range of the calibration curve. If the applicable DSAM does not specify the permitted deviation, a verification is satisfactory only if the concentration as determined from the calibration curve is within a percent difference (PD) of 10 percent of the true concentration of the calibration check standard. If the PD is greater than 10 percent, the laboratory shall prepare a new calibration curve; and

iii. The laboratory shall record all data used in determining the calibration curve, and have the record signed by the analyst. In the record, the laboratory shall include the date of calibration, identification and concentration standards.

5. The laboratory shall prepare calibration curves used in the analysis of metal parameters in Categories DW06, DW07, DW13, NPW07, NPW08, NPW16, SCM06, SCM07, SCM14, AE02, AE06, BT03, BT04, and BT08. When the laboratory uses computer-controlled equipment, the laboratory shall follow the requirements for calibration curves in (c)4 above, except that a minimum of one reagent blank and three standards shall be required, and the laboratory shall follow the manufacturer's instructions for calibrating the instrument and shall verify the calibration curve with two calibration check standards, one at the low end of the concentration range and the other at the high end;

6. The laboratory shall analyze blanks at the frequencies required by the applicable DSAM. For methods used in categories AE01, AE02, AE03, AE04, and AE06 that do not address method blank requirements, method blanks shall be performed at a frequency of at least one per batch of 20 environmental samples or less per sample preparation method, or at least once each day of instrument operation, whichever is more frequent. If the method blank result is greater than the detection limit and contributes greater than 10 percent of the total amount of analyte found in the sample, the source of the contamination must be investigated and measures taken to eliminate the source of contamination. If contamination is found, the data shall be qualified in the report;

7. For parameters in categories DW03, DW05-DW07, DW13, NPW03, NPW05, NPW07-NPW08, NPW16, SCM03-CM04, SCM06-SCM07, SCM14, AE01-AE04, AE06, BT01, BT03-BT04, and BT08, the laboratory shall conduct quality control (QC) check sample analyses to verify the accuracy of the analytical system for the parameter. For each QC check sample analysis, the laboratory shall record the results of the analysis, the date on which the verification analysis was performed, and the method of verification. The laboratory shall have the analyst who performed the analysis sign the record.

i. If the laboratory analyzes 20 or more samples in a calendar month, it shall analyze one QC sample for every 20 samples analyzed during the month. If the laboratory analyzes fewer than 20 samples in a calendar month, it shall analyze one QC sample during the month; and

ii. The laboratory shall calculate the percent recovery (%R) for each parameter in the QC sample. The %R shall be within the limits listed in the applicable DSAM. If the applicable DSAM does not list such limits, the laboratory shall calculate such limits from its experimental data, using the procedure in (c)9 below. If the %R is not within three standard deviations of the limits, the laboratory shall re-analyze the samples in question;

iii. For categories AE01-AE04 and AE06, if a spiking solution is not available, a calibration solution, whose concentration approximates that of the samples, shall be included in each batch and with each lot of media. If a calibration solution must be used for the QC sample, the

client will be notified prior to the start of analysis. The concentration of the QC sample shall be relevant to the intended use of the data and either at a regulatory limit or below it.

8. In all cases, the laboratory shall conduct matrix spike and matrix spike duplicate sample analyses to verify the accuracy and precision of the DSAM for the applicable parameters in the Categories DW03, DW05-DW07, DW13, NPW03, NPW05 NPW07-NPW08, NPW16, SCM03-SCM04, SCM06-SCM07, SCM14, AE04-AE04, AE06, BT01, BT03-BT04 and BT08.

   i. The laboratory shall verify the accuracy and precision of its analyses of parameters in the above categories. The laboratory shall maintain records of such verifications, signed by the analyst performing the verification. In the records, the laboratory shall include the date on which it performed the verification, the method of verification, and the results;

   ii. If the laboratory analyzes 20 or more samples for any one parameter in a calendar month, it shall verify the accuracy and precision of such analyses on at least one of every 20 samples analyzed during the month. If the laboratory analyzes fewer than 20 samples for any one parameter in a calendar month, it shall verify the precision of the analysis once a month;

   iii. The laboratory shall calculate the percent recovery (%R) for each matrix spike and the relative percent difference (RPD) between the matrix spike and matrix spike duplicate for each parameter. The %R and RPD shall meet requirements of the applicable DSAM. If the method does not list limits for %R and RPD values, the laboratory shall establish these limits from its experimental data, using the procedure in (c)9 below;

   iv. For categories AE01-AE04, and AE06, matrix spikes and matrix spike duplicates are not required for those air samples that are introduced directly into an analytical instrument from SUMMA sampling canisters, sorbent tubes, or polyurethane foam (PUF) traps.

9. In all cases, the laboratory shall calculate and document standard deviations for all applicable measurements conducted in Categories DW03, DW05-DW07, DW13, NPW03, NPW05, NPW07-NPW08, NPW16, SCM03-SCM04, SCM06-SCM07, SCM14, AE01-AE04, AE06, BT01, BT03-BT04, and BT08, in accordance with the following requirements:

   i. The laboratory shall calculate standard deviations for n-1 degrees of freedom (n samples - 1) for all %R and RPD measurements in (c)7 and 8 above. For this calculation in connection with (c)7 above, the laboratory shall use ongoing data collected from the analysis of 10 QC samples; for this calculation in connection with (c)8 above, the laboratory shall use ongoing data collected from the analysis of 10 matrix, matrix spike pairs. For parameters in Category DW03 and DW05-DW7, the laboratory shall use samples that have been prepared at the MCL. For other parameters, the laboratory shall use samples that have been prepared to approximate the middle of the concentration range normally encountered in the analysis. The laboratory shall record the theoretical or true value. The laboratory shall calculate and plot the mean value, the warning limits (2

standard deviations), and the corrective action limits (3 standard deviations); and

ii. The laboratory shall record subsequent quality control results for each parameter, and compare the results against its control limits. The control limits shall be updated after a batch of 20 new measurements.

10. A certified environmental laboratory or a laboratory that is applying for certification shall determine its own MDLs in reagent water. MDL data are required for all DSAMs containing reference MDL data for which the laboratory possesses or is applying for certification. The laboratory shall make the MDL determinations in accordance with 40 CFR 136 Appendix B. The Office of Quality Assurance may require the laboratory to determine MDLs for any DSAMs for which it possesses certification. This data is required to support Water Technical Programs N.J.A.C. 7:9-4 and 6:

i. For analyses in the Clean Air Program, the laboratory shall utilize a test method that provides a detection limit that is appropriate and relevant for the intended use of the data. Detection limits shall be determined by the protocol in the mandated test method or in accordance with 40 CFR Part 136, Appendix B. If the protocol for determining detection limits is not specified, the selection of the procedure shall reflect instrument limitations and the intended application of the test method. A detection limit study is not required for any component for which spiking solutions are not available. All procedures shall be documented. Documentation shall include the matrix type. All supporting data shall be retained. The laboratory shall have established procedures to tie detection limits with quantitation limits.

11. A certified environmental laboratory shall determine its MDL data (as stated in (c)10 above) annually. All regulatory sample data except CERCLA CLP shall include the most recent MDL values determined by the laboratory;

12. The laboratory shall maintain a permanent maintenance record containing the following information for each instrument:

i. Date of instrument installation;

ii. Date and description of repairs, modifications, and preventive maintenance;

iii. Signature of person performing the maintenance; and

iv. Chromatographic column information and installation date.

13. The laboratory shall maintain a bound notebook containing records of the preparation of standards. The laboratory shall include the following information in the records:

i. Manufacturer's name and lot number of reagent, date received, percent purity, name of chemical, concentrations if a solution;

ii. The identification number of the concentrated stock standard solution, date of preparation, expiration date, signature of the analyst who prepared the solution, all chemical compounds in the solution,

purity, gross weight, tare weight, net weight, adjusted net weight (corrected for purity of primary standard) (only net weight and adjusted net weight are required when using balances with automatic tare features), dilution volume, and concentration in specified units;

iii. The identification number of the intermediate concentration standard solution (if needed), date of preparation, expiration date, signature of the analyst who prepared the solution, all chemical compounds in the solution, identification number of the concentrated stock, strength of concentrated stock, aliquot of concentrated stock, dilution volume, and final concentration in specified units; and

iv. The identification number of the working standard solution, date of preparation, expiration date, signature of the analyst who prepared the solution, all chemical compounds in the solution, identification number of the intermediate concentration standards, concentration of intermediate standards, aliquot volumes, dilution volumes, and final concentrations in specified units.

7:18-5.6 Requirements for records and data reporting

(a) The laboratory shall retain records concerning chemical analyses. The records to be retained include raw data records, quality control data records (including records of all quality control checks under N.J.A.C. 7:18-5.5(c), chain-of-custody forms, laboratory reports, and the information required under (d) below. The laboratory shall retain each record for at least five years after the date of the analysis, provided however, that the laboratory shall retain records of analyses for ten years if the person requesting the analyses has informed the laboratory that the analyses were to be performed because of epidemiological or public health concerns.

(b) The laboratory shall file and maintain data and other records in an accessible location on the laboratory's premises for one year after the date of analysis so that reviews can be conducted during on-site audits.

(c) The laboratory shall not accept custody of regulatory samples unless a chain-of-custody form is submitted with the samples, in accordance with N.J.A.C. 7:18-9.3(b)4.

1. Before accepting custody of a regulatory sample, the laboratory shall determine that the sample is properly labeled and has met the handling and preservation requirements. If the sample fails to meet those requirements, the laboratory shall indicate that failure on the chain-of-custody section of the sample request form or the chain-of-custody form;

2. The laboratory's sample custodian accepting responsibility for the sample shall sign the chain-of-custody form;

3. The laboratory shall have an internal chain-of-custody procedure or an alternate sample tracking procedure which establishes a sample's integrity and completely tracks its custody during its lifetime in the laboratory; and

4. If the analysis was not performed at the environmental laboratory that first received the sample, the chain-of-custody form shall include the name, address and identification number of the New Jersey certified environmental laboratory to which the sample was forwarded.

(d) The laboratory shall retain the following information as part of the records of analysis:

1. The assigned laboratory sample number or other unique form of identification;

2. The date and time of sample preparation and analysis;

3. The name and signature of the person or persons who performed the analysis;

4. The type of analysis performed and the DSAM used;

5. The results of the analysis and the raw data generated by the analysis, including any correction factors; and

6. The results of the initial calibrations, calibration check standards, and method quality control requirements.

(e) The laboratory shall check all results reported on final report forms against original data to make sure there are no transcription errors.

(f) If the laboratory discovers an error in the analysis of a regulatory sample, and the error may affect the validity of the reported analytical result, the environmental laboratory manager shall report the error to the regulatory program for which the analysis was conducted, and to the client. The laboratory shall make this notification within 72 hours after discovery of the error.

(g) The laboratory shall not report results of analyses to the Department or to any other person unless the original or true duplicate of the results is sent to the client. The report shall be signed by the laboratory manager or designee identified pursuant to N.J.A.C. 7:18-2.11(a)iii.

(h) The laboratory shall not refer samples to another laboratory for analysis, unless the other laboratory is also a certified environmental laboratory. The laboratory requesting the analysis shall provide the results to the client, on the original or true duplicate forms from the certified environmental laboratory that performed the analysis, containing the New Jersey environmental laboratory identification number of the certified environmental laboratory that performed the analysis.

(i) When the laboratory determines that the concentration of nitrate, nitrite, or nitrate/nitrite in a regulatory drinking water sample exceeds the MCL, the laboratory shall notify the affected parties as follows:

1. For non-transient non-community and transient non-community water systems, the laboratory shall notify the water purveyor and the municipal health agency (or, if there is no municipal health agency for the municipality in question, the county health agency) within 24 hours or during the next business day;

2. For community water systems, the laboratory shall notify the water system's superintendent and the Department's Bureau of Safe Drinking Water within 24 hours or during the next business day or;

3. For testing conducted in conformance with the PWTA, the laboratory shall notify both the client requesting such analysis and the local health authority within 24 hours or during the next business day, whichever is sooner.

(j) The laboratory shall include at least the following information in reporting analyses for the Safe Drinking Water program or the Water Pollution program:

1. The certified environmental laboratory name and New Jersey laboratory identification number;

2. The date and time of sampling, sample preparation and analysis;

3. Specific and unique identification of the sample;

4. The type of analysis performed and the analytical method employed, including the method number;

5. The name of each parameter;

6. The dilution factor (DF), if the sample was diluted (for example, to reduce matrix interference);

7. The sample MDL. If the sample was diluted, the laboratory shall adjust the MDL to reflect the dilution. To calculate the adjusted MDL, the laboratory shall multiply the reagent water MDL by the DF;

8. The name and signature of the environmental laboratory manager or designee identified pursuant to N.J.A.C. 7:18-2.11(a)iii; and

9. The results generated by the analysis, reported as a quantitative number with units of measurement (such as mg/L, micrograms/L, or micrograms/kg) or as "not detected" (ND).

(k) In addition to the information required under (j) above, the laboratory may report an extended list of target compounds if it meets the standardization and quality control requirements of the applicable DSAM and N.J.A.C. 7:18-5.5 for the additional parameters on the extended list.

(l) The laboratory shall include at least the following information in reporting analyses for the Solid/Hazardous Waste program or the CERCLA-CLP program, or the Clean Air Program:

1. The certified environmental laboratory name and New Jersey environmental laboratory identification number;

2. The date and time of sampling, sample preparation and analysis;

3. Specific and unique identification of the sample;

4. The type of analysis performed and the analytical method employed, including the method number;

5. The name of each parameter;

6. The dilution factor (DF), if the factor was diluted (for example, to reduce matrix interference);

7. The sample MDL. If the sample was diluted, the laboratory shall adjust the MDL to reflect the dilution. To calculate the adjusted MDL, the laboratory shall multiply the reagent water MDL by the DF. MDL values are not required for CLP reporting;

8. The name and signature of the environmental laboratory manager or designee identified pursuant to N.J.A.C. 7:18-2.11(a)1iii; and

9. The results of the analysis, to be reported as specified in the DSAM.

(m) In addition to the information required under (l) above, the laboratory may report an extended list of target compounds if it meets the standardization and quality control requirements of the applicable DSAM and N.J.A.C. 7:18-5.5 for the additional parameters on the extended list.

(n) Laboratories shall not report analyte concentrations for the Clean Air Program that are below clean canister certification levels, artifact levels for sorbent tubes, or any other blank level as specified in the test method.

SUBCHAPTER 6 RADIOCHEMICAL TESTING PROCEDURES INCLUDING RADON GAS/RADON PROGENY

7:18-6.1 Scope

(a) This subchapter applies to certified environmental laboratories when performing radiochemical testing or radon/radon progeny-in-air testing on regulatory samples, and to laboratories performing radiochemical testing or radon/radon progeny-in-air testing on PT samples or two cross check samples to become certified. This subchapter also applies to laboratories performing the 48-Hour Rapid Gross Alpha Test for compliance with the PWTA. This subchapter applies to radiochemical testing and radon/radon progeny-in-air testing for parameters in the following categories:

1. Drinking Water Matrix:

   i. Category DW10, Radiochemistry - Radioactivity & Radionuclides

   ii. Category DW11, Radon in Drinking Water; and

   iii. Category DW13, Drinking Water – Laboratory Developed and/or Non-Standard Methods

2. Non-Potable Water Matrix:

   i. Category NPW13, Radiochemistry - Radioactivity & Radionuclides;

   ii. Category NPW14, Radon in Non-Potable Water; and

   iii. Category NPW16, NPW – Laboratory Developed and/or Non-Standard Methods;

3. Air and Emissions Matrix:

   i. Category AE05, Radionuclides Analysis;

   ii. Category AE06, Air – Laboratory Developed and/or Non-Standard Methods;

   iii. Category AE08, Radon in Air; and

   iv. Category AE09, Radon in Air – Laboratory Developed and/or Non-Standard Methods; and

4. Solid and Chemical Materials Matrix:

   i. Category SCM12, Radiochemistry – Radioactivity and Radionuclides; and

   ii. Category SCM14, SCM Laboratory Developed and/or Non-Standard Methods.

(b) In addition to satisfying the applicable requirements of N.J.A.C. 7:18-1 through 3, a laboratory performing radiochemical testing within the scope of (a) above shall follow:

1. All applicable requirements in this subchapter; and

2. All requirements specified in the applicable DSAMs, including without limitation any requirements that are more stringent than the requirements in this subchapter.

7:18-6.2 Requirements for radiochemistry environmental laboratory facilities

(a) The laboratory shall not perform radiochemical testing unless its facilities meet the requirements of (a)1 and 2 below, the applicable requirements of N.J.A.C. 7:18-3, and the requirements of the applicable DSAM.

1. The laboratory shall properly ground counting instruments required to measure activities or specific radionuclides described in 40 CFR 141, Methods for the Safe Drinking Water Act. The laboratory shall have available a regulated power supply, either external or internal, for use with each such instrument. The laboratory shall not locate any such instruments:

   i. In a room in which samples and standards are being prepared; or

   ii. In a room in which other types of chemical analyses are being performed.

2. To avoid contamination of work surfaces and personnel in areas in which radioactive standards are being prepared, the laboratory shall use work surfaces meeting the requirements of (a)i or ii below:

   i. Bench surfaces of an impervious material covered with absorbent paper; or

   ii. Trays constructed of stainless steel, plastic, or fiberglass and lined with absorbent paper.

7:18-6.3 Requirements for radiochemistry laboratory equipment and instruments

(a) The supervisor shall have control over the equipment and instruments used in radiochemical testing and radon/radon progeny-in-air testing. The laboratory shall have equipment and instruments that satisfy the applicable requirements listed in (a)1 and 2 below, in (b) and (c) below, in N.J.A.C. 7:18-3, and in the applicable DSAM.

1. The laboratory shall have a muffle furnace that:

   i. Is automatically controlled;

   ii. Has a chamber capacity of at least 2,200 cubic centimeters, and measures at least 10 centimeters (cm) by 9.5 cm by 23 cm; and

   iii. Has a maximum operating temperature of 1,000 degrees Celsius continuous and 1,100 degrees Celsius intermittent; and

2. The laboratory shall have a general purpose table-top centrifuge that has a maximum speed of at least 3,000 revolutions per minute and a loading option of 4 x 50 mL.

(b) A laboratory performing measurements involving radiation counting (as set forth in 40 CFR 141 and required by the Federal Safe Drinking Water Act) shall have the instruments meeting the requirements in (b)1 through 6 below and the requirements of the applicable DSAM:

1. The laboratory shall have a liquid scintillation system to measure tritium in drinking water samples or radon in drinking water or wastewater samples. The system shall meet or exceed the sensitivity requirements of 40 CFR 141.25;

2. The laboratory shall have a gas-flow proportional counting system (as described in the reference cited in 40 CFR 141.25(a)) to measure gross alpha and gross beta activities, radium-226, radium-228, strontium-89, strontium-90, cesium-134, and iodine-131. The detector shall be either a "windowless" (internal proportional counter) or a "thin window" type. A combination of shielding and a cosmic (guard) detector operated in anticoincidence with the main detector shall be used to achieve low background beta counting capability. The alpha and beta background count of the system shall be such that the sensitivity of the radiochemical analysis of the water sample will meet or exceed the requirements of 40 CFR 141.25 with a reasonable counting time of not more than 1000 minutes (16.6 hrs);

3. Instead of the gas-flow proportional counter described in (b)2 above, a laboratory may use a scintillation system designed for alpha counting to measure gross alpha activities and radium-226. When the laboratory uses a scintillation system for counting, it shall follow the sample setup for measurement described in EPA 600-4-80-032, Appendix D, item 2;

4. The laboratory shall have a scintillation cell system designed to accept scintillation flasks ("Lucas cells") to specifically measure radium-226 by the radon emanation method. The system consists of a light-tight enclosure capable of accepting the scintillation flasks, a detector (phototube), a high voltage supply, an amplifier, timers, and scalers. The laboratory shall either purchase the flasks (cells) required for this measurement from commercial suppliers, or construct the flasks (cells) in accordance with the specifications set forth in Lucas, H.F., "Improved Low-Level Alpha Scintillation Counter for Radon". Rev. Sci. Instrum., 28:680, 1967;

5. The laboratory shall have a gamma spectrometer system equipped with one of the following to analyze manmade photon emitters:

   i. A sodium iodide NaI(Tl) crystal detector that:

      (1) Uses a NaI(Tl) crystal measuring at least 7.5 cm x 7.5 cm (though the Department recommends using a crystal measuring 10 cm x 10 cm);

      (2) Is shielded with at least 10 cm of iron or the equivalent thereof;

      (3) Has sufficient distance from the center of the detector to other part of the shield (the Department recommends a distance of at least 30 cm); and

      (4) Has a multichannel analyzer with a memory of not less than 200 channels and at least one readout device for each system;

ii. A solid state lithium drifted germanium detector that meets the requirements of (b)5ii(1) and (2) below, or a gamma-X photon detector that meets the requirements of (b)5ii (1), (2) and (3) below:

(1) The detector shall be sufficiently efficient to make the gamma spectrometry system sensitive enough to meet the minimum detectable activity requirements cited in 40 CFR 141.25;

(2) The detector shall be shielded with at least 10 cm of iron or the equivalent thereof; and

(3) The gamma-X photon detector shall be connected to a multichannel analyzer that has a memory of at least 2,000 channels and at least one readout device for each system; and

6. The laboratory shall have a fluorometer capable of detecting 0.5 nanogram (ng) of uranium for the analysis of uranium by the fluorometric method.

(c) A laboratory certified to perform measurements involving radiation counting (as set forth in the Radon Act), shall meet the following requirements when performing radon/radon progeny-in-air analyses:

1. If required by the authorized measurement protocols, the laboratory shall use a microscope or automated counting system capable of detecting and counting alpha tracks. A laboratory performing an analysis with a radon progeny-in-air integrating sampling unit (RPISU) shall use a thermoluminescent dosimeter (TDL) reader; and

2. To analyze manmade photon emitters, the laboratory shall use a gamma spectrometer system equipped as described under (b)5 above.

7:18-6.4 Required use of DSAMs

(a) In performing radiochemical analysis of a regulatory sample (including, without limitation, analysis of a PT sample by a laboratory that is applying to become certified), a laboratory shall use only:

1. A DSAM from the applicable Category listed in N.J.A.C. 7:18-6.1(a) for which the laboratory is certified; or

2. An applicable ATP approved by the Department pursuant to N.J.A.C. 7:18-2.20 for the laboratory and, if applicable, for the facility in question; or

3. USEPA Method 900, Gross Alpha and Beta Radioactivity in Drinking water, for gross alpha testing in screening for the presence of all regulated alpha emitting radionuclides modified as follows:

i. A Thorium-230 standard shall be used as the test calibration standard;

ii. The initial counting of the plancheted sample shall be initiated between 36 to 48 hours from the time of sample collection;

iii. If the calculated value from the initial gross alpha count is less than or equal to five pCi/L, that value shall be reported and no further radiochemical analysis of the sample is required; and

iv. If the gross alpha value from the 36 to 48 hour count exceeds five pCi/L, then the same plancheted sample shall be re-counted between 20 to 28 hours after the initial count; and this calculated value shall be reported as the final gross alpha result.

(b) The requirements of (a) above do not apply to the analysis of a non-regulatory sample, if the requirements of N.J.A.C. 7:18-2.22(b) are satisfied.

7:18-6.5 Requirements for general radiochemical environmental laboratory practices

(a) A laboratory shall meet the following requirements with respect to laboratory standards, wastes, samples, reagents and solutions used in radiochemical analysis:

1. The laboratory shall store radioactive standards and radioactive wastes in an enclosed and properly labeled area, either within the analytical environmental laboratory or in a separate room or facility. The laboratory shall store standards, samples, and radioactive wastes safely in containers that protect against flammability and against contamination of the laboratory;

2. The laboratory shall prepare standards and samples in an area of the environmental laboratory specifically designated for and exclusively used for the preparation of radioactive standards and samples. The laboratory shall take adequate precautions in this area to ensure against radioactive contamination. The laboratory shall provide for safe storage and disposal of radioactive wastes and shall monitor the work area for radioactivity;

3. The laboratory shall label all reagents and reagent solutions to indicate identity and, when applicable, titer, strength or concentration, recommended storage requirements, preparation, expiration date, and any other pertinent information;

4. The laboratory shall immediately discard any reagent or reagent solution that is past its expiration date; and

5. The laboratory shall not use materials of substandard reactivity or deteriorated materials.

7:18-6.6 Requirements for quality assurance/quality control program

(a) The laboratory shall develop and keep current a quality assurance/quality control manual. The laboratory shall not perform analyses of regulatory samples without having a current quality assurance/quality control manual covering the analysis in question. In the manual, the laboratory shall describe the following:

1. The procedures that the laboratory will use in meeting the quality control requirements of this subchapter, N.J.A.C. 7:18-3, and all applicable DSAMs, including but not limited to requirements pertaining to laboratory equipment, instrumentation and supplies; and

2. The frequency with which the laboratory will perform the procedures listed pursuant to (a)1 above.

(b) The laboratory shall develop and implement a written methods manual containing a standard operating procedure (SOP) for each DSAM, in accordance with the criteria and procedures of the DSAM and this chapter. A laboratory shall not perform analyses using a DSAM unless it has developed and implemented such an SOP for the DSAM.

1. The laboratory shall update the manual to reflect any changes in the procedures practiced by the laboratory.

2. The laboratory shall keep copies of the methods manual in the immediate bench area of personnel engaged in the analysis of samples and related procedures within the radon/radon progeny-in-air categories.

3. In the manual, the laboratory shall properly designate by revision number and date the standard operating procedure (SOP) for a specified analytical method for a particular type of analysis.

4. Changes to SOPs are effective only if:

   i. The change is made by the manager, supervisor or quality assurance officer of the laboratory; and

   ii. The manager, supervisor or quality assurance officer makes the change in writing, signed and dated by the manager, supervisor or quality assurance officer.

5. The laboratory shall make manufacturers instruction manuals and any applicable regulations readily available to laboratory personnel at all times. Textbooks may be used to supplement written instructions, but may not be used in lieu thereof.

(c) A laboratory performing radiochemical testing shall conduct the quality control checks specified in the applicable DSAMs, and take the additional measures listed in (c)1 through 6 below. The laboratory shall maintain permanent records of preventive maintenance, periodic inspection, testing, and calibration for the proper operation of radiation instruments and remedial actions taken in response to detected defects. The laboratory shall maintain daily quality control performance charts and performance records for each instrument.

1. The laboratory shall calibrate each radon/radon progeny-in-air measurement device and technique before putting it into service. The laboratory shall recalibrate each such device and technique at least once every twelve months, and after any repair or modification;

2. For radon/radon progeny-in-air analysis, the laboratory shall record and maintain all information specified by the authorized measurement protocols and methods described in the DSAM and this subchapter;

3. Each day, the laboratory shall perform 10 percent duplicate analyses to verify internal environmental laboratory precision;

4. Before beginning a series of specific analyses, the laboratory shall measure a counting standard and a background standard. Thereafter, the laboratory shall make repeat measurements of the counting standard and background standard after every 20 samples have been measured;

5. During each day in which the laboratory performs fewer than 20 specific analyses, the laboratory shall measure one counting standard and background sample; and

6. The laboratory shall keep all radiochemical instruments in good repair. The laboratory shall maintain factory service contracts for such instruments, or employ an electronics technician qualified to repair and maintain such instruments.

7:18-6.7 Requirements for records and data reporting

(a) The laboratory shall retain records concerning radiochemical analyses. The records to be retained include raw data records, quality control data records (including records of all quality control checks under N.J.A.C. 7:18-6.6(c)), chain-of-custody forms, laboratory reports, and the information required under (d) below. The laboratory shall retain each record for at least five years after the date of the analysis, provided however, that the laboratory shall retain records of analyses for 10 years if the person requesting the analyses has informed the laboratory that the analyses were to be performed because of epidemiological or public health concerns.

(b) The laboratory shall file and maintain data and other records in an accessible location on the laboratory's premises for one year after the date of analysis so that reviews can be conducted during on-site audits.

(c) The laboratory shall not accept custody of regulatory samples unless a chain-of-custody form is submitted with the samples, in accordance with N.J.A.C. 7:18-9.3(b)4.

1. Before accepting custody of a regulatory sample, the laboratory shall determine that the sample is properly labeled and has met the handling and preservation requirements. If the sample fails to meet those requirements, the laboratory shall indicate that failure on the chain-of-custody section of the sample request form or the chain-of-custody form;

2. The laboratory's sample custodian accepting responsibility for the sample shall sign the chain-of-custody form;

3. The laboratory shall have an internal chain-of-custody procedure or an alternate sample tracking procedure which establishes a sample's integrity and completely tracks its custody during its lifetime in the laboratory; and

4. If the analysis was not performed at the laboratory that first received the sample, the chain-of-custody form shall include the name, address and identification number of the New Jersey certified environmental laboratory to which the sample was forwarded.

(d) The laboratory shall retain the following information as part of the records of analysis:

1. The assigned laboratory sample number or other unique form of identification;

2. The date, specific place, and time of the sampling;

3. The name and signature of the person who collected the sample;

4. Identification of sample as a routine distribution sample, check sample, raw or process water sample, or other special purpose sample;

5. The date that the laboratory received the sample;

6. The date and time of sample preparation and analysis;

7. The name and signature of the person or persons who performed the analysis;

8. For radon/radon progeny-in-air samples taken by a certified radon measurement specialist or certified radon measurement technician, a chain-of-custody form indicating the sampling device/technique that was used and whether the authorized measurement protocols were followed;

9. The type of analysis performed and the DSAM used; and

10. The results of the analysis and raw data generated by the analysis.

(e) The laboratory may transfer all information described in (d) above to tabular summaries, except for:

1. Information regarding compliance check samples as detailed in 40 CFR 141.33(b); and

2. The chain-of-custody forms described in (d)8 above.

(f) Upon completion of the analysis, the laboratory shall supply the original or a true duplicate of the results of the tests or analyses to the client. The laboratory shall include the following information in reporting the results:

1. The certified environmental laboratory name and New Jersey laboratory identification number;

2. The date, time, and location of sample analysis;

3. The name of the person or persons who performed the analysis;

4. The type of analysis performed and the analytical method employed;

5. The results of the analysis; and

6. The name and signature of the environmental laboratory manager or designee identified pursuant to N.J.A.C. 7:18-2.11(a)1iii.

(g) The laboratory shall not refer samples to another laboratory for analysis, unless the other laboratory is also a certified environmental laboratory. The laboratory requesting the analysis shall provide the results to the client, on the original or true duplicate forms from the certified environmental laboratory that performed the analysis, containing the New Jersey environmental laboratory identification number of the certified environmental laboratory that performed the analysis.

(h) If the laboratory discovers an error in the analysis of a regulatory sample, and the error may affect the validity of the reported analytical result, the environmental laboratory manager shall report the error to the regulatory program for which the analysis was conducted, and to the client. The laboratory shall make this notification within 72 hours after discovery of the error.

SUBCHAPTER 7 TOXICITY TESTING

7:18-7.1 Scope

(a) This subchapter applies to certified environmental laboratories when performing toxicity testing on regulatory samples, and to other laboratories performing toxicity testing on PT samples to become certified.

1. A laboratory performing acute toxicity tests shall meet the minimum requirements established at N.J.A.C. 7:18-7.2 through 7.7.

2. A laboratory performing chronic toxicity tests shall meet the minimum requirements established at 40 CFR 136, specifically Table 1A, incorporated herein by reference at N.J.A.C. 7:18-1.5(a)2.

3. A laboratory performing chronic toxicity tests shall also meet the minimum requirements established at N.J.A.C. 7:18-3.

7:18-7.2 Laboratory facilities and safety

(a) A laboratory performing acute toxicity tests shall meet the following minimum requirements:

1. The laboratory shall meet all applicable requirements of N.J.A.C. 7:18-3, including without limitation N.J.A.C. 7:18-3.2;

2. The laboratory shall allocate floor space and bench top space as follows:

i. For bioassay-toxicity testing, the laboratory shall allocate at least 50 square feet of floor space with at least 20 square feet of bench top space. For each additional toxicity test to be performed concurrently, the laboratory shall allocate at least 15 additional square feet of bench top space;

ii. For rearing-holding of invertebrate test organisms, the laboratory shall allocate at least 50 square feet of floor space with at least 10 square feet of bench top space. For rearing-holding of vertebrate test organisms, the laboratory shall allocate at least 75 square feet of floor space with at least 15 square feet of bench top space; and

iii. The laboratory may either combine the water chemistry area with the equipment cleaning area, or separate the areas. The laboratory shall allocate a total of 60 square feet of floor space for water chemistry and equipment cleaning, with at least 20 square feet of bench top space. If the water chemistry and the equipment cleaning areas are separated, then the equipment cleaning area shall be no less than 15% (in square feet) of the floor and bench top space allocated to the water chemistry area. The water chemistry area is used for preparation and standardization of reagents and media, and for working with hazardous or noxious materials such as acids and solvents. The laboratory should separate this area from the area used for test organism culturing-holding and from the area used for toxicity testing. The equipment cleaning area is used for the decontamination of equipment used for sampling and/or testing and shall be separate from the test organism culturing-holding area and from the toxicity test testing area.

3. For bioassay-toxicity testing areas, the laboratory shall have a temperature-controlled room or water bath capable of maintaining the temperature of test solutions within two degrees Celsius of the test temperature.

4. For test organism rearing-holding areas, the laboratory shall have:

i. A temperature-controlled room or chamber capable of maintaining the temperature of solutions within two degrees Celsius of the selected temperature;

ii. A supply of distilled or deionized water adequate for making up reagents and media. The water shall satisfy the requirements of N.J.A.C. 7:18-7.4(a) for laboratory pure water; and

iii. A supply of high quality fresh and/or saltwater adequate for use in the rearing/holding tanks or vessels. The water shall satisfy the requirements of N.J.A.C. 7:18-7.4(b) for laboratory grade water; and

5. For water chemistry and equipment cleaning areas, the laboratory shall have:

i. Access to a well-ventilated area or fume hood for the safe use of noxious chemicals; and

ii. A supply of laboratory pure water satisfying the requirements of N.J.A.C. 7:18-7.4(a).

7:18-7.3 Laboratory equipment, instruments and materials

(a) A laboratory performing toxicity tests shall have, on the premises and under the control of the laboratory supervisor, equipment and instruments that satisfy the requirements of (a)1 through 14 below and N.J.A.C. 7:18-3.3.

1. For materials used in the construction of toxicity testing systems, test organism culturing systems, and sample collection, handling, and transport systems:

i. The laboratory shall use only materials listed as "Approved" in Table 7.3 below for the type of test organism in question.

Table 7.3
Materials for constructing toxicity testing systems,
test organism culturing systems, and
sample collection, handling and transport systems

	TEST ORGANISMS	
Material	**Vertebrate**	**Invertabrate**
Glass, borosilicate, tempered, or soda lime	Approved	Approved
Stainless Steel, #304 or 316	Approved	Approved
Medical grade or food contact silicone, sealant, tubing and stoppers	Approved	Approved
Perfluorocarbon plastics	Approved	Approved

Material	Vertebrate	Invertabrate
Polyethylene, white or clear	Approved	Approved
Polypropylene	Approved	Approved
Polycarbonate	Approved	Approved
Polystyrene	Approved	Approved
Acrylic	Approved	Approved
Tygon®, clear or black	Approved	Not Approved (except for Mysids)
Nylon	Approved	Approved
Fiberglass	Approved	Approved
Potable water or food contact grade polyvinyl chloride	Approved	Approved
Rubber, Neoprene and Gum Latex	Not Approved	Not Approved
Ceramic (Aluminum Oxide)	Approved	Approved

ii. The laboratory shall use glass, stainless steel, ceramic and perfluorocarbon plastics whenever possible for components that come in contact with wastewater samples;

iii. If the laboratory uses silicone, polyethylene, polypropylene, nylon, Tygon®, polycarbonate and polystyrene plastics for a component that comes in contact with wastewater samples, it shall either discard the component after a single use, or demonstrate that the component can be decontaminated, without significant degradation, by one or more cleaning procedures listed in N.J.A.C. 7:18-7.4(c). To demonstrate that the component can be decontaminated, the laboratory shall:

(1) Clean the component in accordance with the applicable procedures under N.J.A.C. 7:18-7.4(c) after using the component to conduct a compliance toxicity test;

(2) Remove the component, taking an adequate sample of each type of material being used;

(3) Segregate each type of material into a separate container, just large enough to completely immerse the materials in laboratory pure water. The laboratory shall have cleaned the container using the procedure under N.J.A.C. 7:18-7.4(c) appropriate to the test organism used;

(4) Soak the component in laboratory pure water for 24 hours;

(5) Decant a sufficient volume of water from each container (or groups of containers of like materials) to analyze for the organic compounds, metals and trace elements listed in N.J.A.C. 7:18-7.4(b)1;

(6) Perform an analysis for each type of material for which the laboratory seeks approval; and

(7) Forward the analytical results to the Department. The Department shall approve the use of the material only if the analytical results show that there is no significant degradation of the material, or cross-over of contamination.

iv. The use of polyvinylchloride, fiberglass, and acrylics shall only be for holding, acclimating, and rearing system components and for dilution water storage and delivery system components. Before use, the laboratory shall test every batch of these materials for toxicity to the pertinent test organisms. The laboratory shall retain the documentation of such tests;

v. The laboratory shall not use Tygon® for components used in an invertebrate testing, holding, acclimating or rearing system except for Mysids. If the laboratory uses bakelite components in an invertebrate testing, holding, acclimating or rearing system, and if that bakelite is heated to sterilization temperatures, the laboratory shall not allow any other system components to come in contact with either the bakelite or the fumes arising from the bakelite;

vi. The laboratory shall not use in toxicity testing any material that is not listed in Table 7.3, without first obtaining the Department's written approval. To obtain the Department's approval, the laboratory shall test the material's toxicity to the pertinent test organisms and submit documentation of the testing to the Department. The Department shall approve the material only if the documentation demonstrates that the material does not exhibit toxic or subtoxic effects (that is, decreased brood size in invertebrate test organisms) to the test organisms; and

vii. Except for materials labeled and sold as either, "medical grade" or "food grade," the laboratory shall clean all new materials before using them. The laboratory shall follow the following cleaning procedure:

(1) Wash the materials with a solution consisting of a detergent and hot tap water. Prepare the solution according to the detergent manufacturer's instructions. Be sure that the detergent is of a type that leaves no toxic residue.

(2) Rinse the materials well with hot tap water to remove all traces of detergent;

(3) If the material is all-glass laboratory ware or perfluorocarbon plastic material, and has a capacity less than or equal to four liters, then soak glassware in 10 percent hydrochloric acid (HCl) for at least one hour to remove heavy metal contamination. If the material is all-glass laboratory ware or perfluorocarbon plastic material, and has a capacity greater than four liters, then rinse it at least twice with 10 percent HCl. After soaking or rinsing with acid, rinse twice or more with laboratory pure water to remove all traces of acid; and

(4) If the material is perfluorocarbon plastic, rinse it twice with full strength acetone, then rinse it at least twice with laboratory pure water and air or oven dry it.

2. For flow through toxicity tests, the laboratory shall use a dilutor system for the accurate measuring, mixing, and delivery of sample and dilution water to the exposure chambers. Detailed descriptions of dilutor systems allowable are found in Standard Methods, 16th edition, and in EPA Acute Methods #027F-1993. The laboratory shall use a dilutor system that:

   i. Provides an adequate supply of dilution water to maintain 24 hours of continuous operation. The system shall obtain the supply from a dilution water reservoir, or by direct continuous pumping from the source of the water;

   ii. Is capable of metering the flow of dilution water and sample into a mixing chamber for the determination of concentrations. The system shall use a constant head box or metering pumps to meter the flow of dilution water and sample;

   iii. Uses mixing chambers to ensure complete mixing of dilution water and sample before dispensing solutions into the exposure chambers;

   iv. Uses separate delivery tubes to transmit the dilution water and sample from the flow splitters, after the mixing chambers, to each of the replicate exposure chambers;

   v. Provides a flow rate through the exposure chambers that results in at least five 90 percent water volume changes every 24 hours, and that is sufficient to maintain dissolved oxygen in the exposure chambers in accordance with N.J.A.C. 7:18-7.5(h);

   vi. Provides a flow rate through the exposure chambers that does not vary by more than ± 10 percent among all exposure chambers or ± five percent within any given exposure chamber throughout the duration of the test;

   vii. Maintains the test concentration in each exposure chamber within five percent of the starting concentration for the duration of the test;

   viii. Should be designed to maintain a constant temperature in the exposure chambers within ± two degrees Celsius of the specified test temperature;

   ix. Is designed to curtail automatically the delivery of the sample to the mixing chambers if the supply of dilution water to the mixing chamber is interrupted;

   x. Is designed to prevent the test organisms from entering the overflow outlets in the exposure chambers;

   xi. Is capable of maintaining at least five separate effluent dilutions and a control containing dilution water with replicate exposure chambers; and

   xii. Has had its exposure chamber flow rate, exposure chamber effluent concentration accuracy, and test solution temperatures checked and calibrated initially and at least once per day for the duration of the test, including the last day of the test. The laboratory shall keep records of these calibrations in accordance with N.J.A.C.

7:18-7.7(i), and make them available to the Department during an inspection of the laboratory.

3. The laboratory shall use holding, acclimating and culturing chambers that:

   i. Are constructed of non-toxic materials that satisfy the requirements of (a)1 above;

   ii. Include devices for temperature control, or are located in a temperature-controlled room;

   iii. Are constructed for ease of cleaning and the prevention of waste material build-up; and

   iv. If used for vertebrate species, are shielded from outside disturbances. The laboratory may shield the chamber either by isolating it in a low-traffic area, or by shielding it individually. If the materials used to shield a chamber individually will contact the culture media, the laboratory shall use materials that satisfy the requirements of (a)1 above.

4. The laboratory shall use test chambers that:

   i. Can accommodate the testing of fish species in containers with a test solution at least five centimeters (cm) deep;

   ii. If fabricated from non-seamless stainless steel, have welded seams rather than soldered seams;

   iii. If fabricated from lead-free glass, are made in one piece or made with the use of clear silicone adhesive, of the type approved by the manufacturer for use in aquaria, to bond the seams. The laboratory shall expose as little of the silicone adhesive to the test solution as possible. Extra beads of adhesive shall be placed only on the outside of containers; and

   iv. Are designed to keep the surface areas as small as possible in relation to their volume, in order to limit sorption to the vessel walls. Containers to be used with flow-through tests shall be designed to keep the liquid surface area/volume ratio as small as possible in order to reduce loss of volatile substances.

5. A laboratory shall have and use a balance that:

   i. Satisfies the requirements of N.J.A.C. 7:18-3.3(a)2;

   ii. Has a range of at least 0-40 grams;

   iii. Is readable within 0.1 grams;

   iv. Provides reproducibility of at least 0.05 grams.

6. Laboratories performing acute toxicity testing shall have and use one or more pH meters that satisfy the requirements of N.J.A.C. 7:18-3.3(a)3.

7. Laboratories performing acute toxicity testing shall have and use one or more conductivity instruments that satisfy the requirements of N.J.A.C. 7:18-3.3(a)6.

8. Laboratories performing acute toxicity testing shall have and use one or more dissolved oxygen meters that satisfy the requirements of N.J.A.C. 7:18-5.2(a)17.

9. Laboratories performing tests with Cladoceran, shall have the following equipment:

   i. A light meter capable of measuring in Lux or footcandles in the range of at least 0 to 200 footcandles;

   ii. Medicine droppers or pipettes with 1.0 to 3.0 mm bores;

   iii. Borosilicate glass beakers with covers, or test chambers made of another approved material under (a)1 above; and

   iv. All testing equipment to be constructed with materials as approved for invertebrates in (a)1 above.

10. A laboratory shall have a refrigerator that is capable of storing the required sample volumes and that satisfies the requirements of N.J.A.C. 7:18-3.3(a)7.

11. Laboratories performing zooplankton or macrocrustacean toxicity tests shall have and use a low-power magnification device, for working with invertebrate species.

12. A laboratory shall use only glassware, plasticware and metal utensils that satisfy the requirements of N.J.A.C. 7:18-3.3(a)8. The laboratory shall use plasticware only if it is made of inert, nontoxic materials approved under (a)1 above. When manually establishing test solutions, the laboratory shall use Class "A" volumetric flasks or graduated cylinders, calibrated "to deliver."

13. Dilution water sample containers used by the laboratory for discrete samples shall meet the following requirements:

   i. The laboratory shall use only wide-mouthed containers equipped either with stoppers, screw caps or an equivalent closure;

   ii. The laboratory shall use only containers and cap liners constructed of materials approved under (a)1 above; and

   iii. The laboratory shall clean each container after each use, in accordance with N.J.A.C. 7:18-7.4(c).

14. A laboratory performing discrete effluent sampling shall use containers meeting the following requirements:

   i. The laboratory shall use either wide-mouthed glass containers, disposable unplasticized plastic containers, or disposable unplasticized plastic liners for containers that are leakproof and constructed of materials meeting the requirements of (a)1;

ii. The laboratory shall not reuse containers made of materials listed in (a)1ii above unless they have been cleaned in accordance with N.J.A.C. 7:18-7.4(c);

iii. The laboratory shall discard after one use any containers made of materials specified in (a)1iii above, and not cleaned and reused unless the laboratory has demonstrated pursuant to (a)1iii above that the container can be decontaminated without significant degradation;

iv. Container closures shall be leakproof and constructed of materials meeting the requirements of (a)1 above;

v. The laboratory shall store containers in a manner that prevents contamination.

7:18-7.4 General laboratory procedures

(a) A laboratory performing acute toxicity tests shall have available and use glass-distilled or deionized water, referred to in this chapter as laboratory pure water, that satisfies the following requirements:

1. The laboratory pure water shall have conductivity of less than 1.0 micromho/cm at 25 degrees Celsius, and shall not contain any of the constituents listed in Table 7.4(a) in a concentration greater than or equal to the limit specified in Table 7.4(a).

TABLE 7.4(a)
Constituents in Laboratory Pure Water

Constituent	**Limit**
Arsenic, Chromium(VI) and Nickel	10.0 µg/L each
Total Organic Carbon (TOC)	2.0 mg/L
Fluoride	100 µg/L
Un-ionized Ammonia	12.5 µg/L
Lead and Copper	5.0 µg/L each
Silver	2.0 µg/L
Mercury	0.30 µg/L
Total Residual Chlorine	0.5 µg/L
Cadmium	1.0 µg/L
Aldrin	0.03 µg/L
Chlordane	0.5 µg/L
DDT and DDE pesticides	0.13 µg/L each
Dieldrin	0.05 µg/L
Endosulfan I and II	0.06 µg/L
Endrin	0.10 µg/L
Heptachlor	0.09 µg/L
Lindane	0.08 µg/L
PCBs (as PCB 1242)	0.07 µg/L
Toxaphene	1.00 µg/L
Standard (Heterotrophic) Plate Count	100 colony forming units (CFU)/100 mL

Constituent	**Limit**
Bacteriological Water Suitability Test	0.8-3.0 Ratio
Total Solids	10 mg/L

2. The laboratory shall have the laboratory pure water analyzed at least monthly for conductivity or resistivity, and for total residual chlorine. The laboratory shall document the results.

3. The laboratory shall have the laboratory pure water analyzed at least semi-annually for standard plate count, and at least annually for TOC, total solids, fluoride, un-ionized ammonia, arsenic, hexavalent chromium, copper, lead, nickel, cadmium, mercury, silver, bacteriological water suitability test, all listed pesticides, and PCBs. The laboratory shall document the results.

(b) A laboratory performing acute toxicity tests shall have available and use a supply of water of constant quality for the holding, spawning, and rearing of aquatic organisms, referred to in this subchapter as laboratory grade water. The laboratory may reconstitute the laboratory grade water from laboratory pure water or obtain it from a natural source. The laboratory shall use only laboratory grade water that satisfies the following requirements:

1. The laboratory grade freshwater supplies shall be constant in quality and shall not contain any of the constituents listed in Table 7.4(b)1 in a concentration greater than the limit specified in Table 7.4(b)1.

TABLE 7.4(b)1
Constituents in Laboratory Grade Freshwater

Constituent	**Limit**
Salinity	3.5 parts per thousand (ppt)
Suspended solids	80 mg/L
TOC	10 mg/L
Un-ionized Ammonia	12.5 µg/L
Total residual chlorine	0.5 µg/L
Aldrin	3.0 µg/L
Chlordane	0.5 µg/L
DDT & DDE	0.13 µg/L each
Dieldrin	0.05 µg/L
Endosulfan I & II	0.06 µg/L each
Endrin	0.10 µg/L
Heptachlor	0.09 µg/L
Lindane	0.08 µg/L
PCBs (as PCB 1242)	0.5 µg/L
Toxaphene	1.00 µg/L
Fluoride	100 µg/L
Antimony	146 µg/L
Arsenic	40.0 µg/L
Cadmium	$e^{(0.7852[\ln(\text{Hardness})]-3.49)}$ µg/L
Hexavalent chromium	11 µg/L
Copper	$e^{(0.8545[\ln(\text{Hardness})]-1.465)}$ µg/L
Lead	$e^{(1.273[\ln(\text{Hardness})]-1.460)}$ µg/L
Mercury	0.30 µg/L
Nickel	$e^{(0.84[\ln(\text{Hardness})]+1.1645)}$ µg/L
Selenium (recoverable inorganic selenite)	35 µg/L
Silver	$e^{(1.72[\ln(\text{Hardness})]-6.52)}$ µg/L
Zinc	$e^{(0.8473[\ln(\text{Hardness})]+0.7614)}$ µg/L

2. The laboratory grade saltwater supplies shall be constant in quality, have a salinity greater than 3.5 ppt with a range favorable to the test organisms, and shall not contain any of the constituents listed in Table 7.4(b)2 in a concentration greater than the limit specified in Table 7.4(b)2.

TABLE 7.4(b)2
Constituents in Laboratory Grade Saltwater

Constituent	**Limit**
Suspended solids	80 mg/l
TOC	10 mg/L
Un-ionized Ammonia	12.5 µg/L
Aldrin	1.3 µg/L
Chlordane	0.5 µg/L
DDT & DDE	0.13 µg/L each
Dieldrin	0.05 µg/L
Endosulfan I & II	0.05 µg/L each
Endrin	0.10 µg/L
Heptachlor	0.09 µg/L
Lindane	0.08 µg/L
PCBs (as PCB 1242)	0.5 µg/L
Toxaphene	1.0 µg/L
Fluoride	1400 µg/L
Antimony	146 µg/L
Arsenic	136 µg/L
Cadmium	2.0 µg/L
Hexavalent chromium	50 µg/L
Copper (dissolved)	2.9 µg/L
Lead	5.6 µg/L
Mercury	0.2 µg/L
Nickel	8.3 µg/L
Selenium (recoverable inorganic selenite)	54 µg/L
Silver	5.0 µg/L
Zinc	86 µg/L

3. The laboratory shall have the laboratory grade freshwater and saltwater analyzed at least monthly for pH, salinity, alkalinity, and un-ionized ammonia. Suspended solids should be analyzed monthly.

4. The laboratory shall have the laboratory grade freshwater analyzed at least monthly for total residual chlorine and total hardness.

5. The laboratory shall have the laboratory grade waters analyzed at least semi-annually for TOC, all listed pesticides, PCBs, fluoride, and all trace elements and metals specified in N.J.A.C. 7:18-7.4(b)1 for freshwater and 2 for saltwater.

6. The laboratory shall document the analyses performed under (b)3, 4 and 5 above.

7. A source of laboratory grade fresh water shall be considered to be of constant quality if the monthly ranges of total hardness, alkalinity, conductivity, and salinity are less than 10 percent of the average values, and the pH range is less than 0.4 standard units.

8. No adjustment to the salinity of a natural saltwater shall be made except, when necessary, as follows:

   i. To reduce the salinity of the water, the laboratory may add either laboratory pure water or laboratory grade freshwater; or

   ii. To increase the salinity, the laboratory may add hypersaline brine prepared in accordance with the procedure specified in the NJDEP, "Standardized Culturing Method for the Sheepshead Minnow, *Cyprinodon variegatus*," #CM004, commercial dry sea salts, or a strong solution of artificial laboratory grade saltwater.

9. Before using laboratory grade saltwater obtained from natural sources to culture invertebrate species, the laboratory shall filter the water through a filter no larger than 20 microns.

(c) A laboratory performing acute toxicity tests shall clean the equipment and containers used in the tests, pursuant to the procedures listed in (c)1 through 3 below.

1. The laboratory shall clean all new materials and containers, except for approved materials marked and sold as "Medical Grade" or "Food Grade," using the procedures in N.J.A.C. 7:18-7.3(a)1vii.

2. The laboratory shall clean all reusable test vessels, sample containers, toxicant delivery systems, and any other equipment used in testing that has come in contact with a toxicant or effluent. To clean the equipment, the laboratory shall:

   i. Scrub in a 1 percent solution, preferably 50 degrees Celsius or warmer, of a non-toxic, phosphate free, synthetic laboratory detergent, such as Linbro 7X® tissue cleaning agent, and tap water;

   ii. Rinse three times in hot tap water;

   iii. For organic contamination or stains that are not removed after using the procedures in (c)2i and ii above, rinse or soak in a 200 mg/L solution of sodium hypochlorite. Do not use acid and hypochlorite together;

   iv. Rinse the equipment three times with laboratory pure water;

v. To remove heavy metal contamination, soak smaller equipment or containers in freshly prepared five percent by volume or stronger HCl for at least one hour. Rinse equipment or containers too large to soak twice with fresh five percent by volume or stronger HCl;

vi. Rinse at least three times in laboratory pure water;

vii. Rinse twice with fresh 100 percent acetone followed by two rinses with 100 percent methanol;

viii. Rinse three times with laboratory pure water; and

ix. Either air or oven dry.

3. After each use, the laboratory shall clean all reusable glassware, tanks, containers, and equipment used for culturing and for dilution water sampling and delivery for testing. To clean the equipment, the laboratory shall:

i. Scrub in a one percent solution, preferably 50 degrees Celsius or warmer, of a non-toxic, phosphate free, laboratory detergent, such as Linbro 7X® tissue culture cleaning agent, and either laboratory grade freshwater or tap water;

ii. If contamination with disease or parasites is suspected, disinfect the tanks, equipment and containers by either of the following:

(1) Soak for at least one hour with either a 200 mg/L solution of sodium hypochlorite or a 0.5 percent solution of commercial chlorine bleach; or

(2) Rinse with either a 200 mg/L solution of sodium hypochlorite or a 0.5 percent solution of commercial chlorine bleach; or

(3) Autoclave at a temperature of 121 degrees Celsius and a pressure of 1.1 lb. per cm^2 (15 PSI) for 15 minutes;

iii. If not autoclaving, rinse at least three times with either hot laboratory grade freshwater or tap water; and

iv. Rinse at least three times with laboratory pure water;

(d) A laboratory performing acute toxicity tests shall use only organisms approved by the Department and identified to species using systematic keys appropriate for the test organism. The approved test organisms for acute toxicity testing are as follows:

1. If the receiving water immediately downstream of the discharge being tested has a natural salinity of less than or equal to 3.5 parts per thousand (ppt) at mean high tide, the laboratory shall use the following freshwater organisms as specified in the applicable NJPDES permit:

i. The following species of cold-water fishes:

(1) Rainbow trout - *Oncorhynchus mykiss;*

(2) Brown trout - *Salmo trutta;*

(3) Brook trout - *Salvelinus fontinalis*;

ii. The following species of warmwater fishes:

(1) Fathead minnow – *Pimephales promelas*;

(2) Bluegill - *Lepomis macrochirus.*

iii. The following invertebrate species of freshwater zooplankton:

(1) Cladoceran

(A) Daphnid - *Daphnia magna;*

(B) Daphnid - *Daphnia pulex;*

(C) Cladocern - *Ceriodaphnia dubia.*

2. If the receiving water immediately downstream of the discharge being tested has a natural salinity, at mean high tide, of greater than 3.5 ppt, or if the receiving water is a marine water (that is, a tidal saltwater), the laboratory shall use the following saltwater organisms as specified in the applicable NJPDES permit:

i. The following estuarine and marine species of saltwater fishes:

(1) Sheepshead minnow - *Cyprinodon variegatus*

(2) Tidewater silverside -*Menidia peninsulae*

(3) Atlantic silverside - *Menidia menidia*

(4) Inland silverside - *Menidia beryllina*

ii. The following marine and estuarine invertebrate species of saltwater macrocrustaceans:

(1) Grass shrimp - *Palaemonetes pugio*

(2) Mysid - *Mysidopsis bahia*

(e) A laboratory performing acute toxicity tests shall prepare test organisms in accordance with the following requirements:

1. All organisms used in a test shall be from the same source, the same age group or life stage, and the same species.

i. All fish shall be from the same year class and the total length of the longest fish shall not be more than twice that of the shortest fish. The laboratory shall make the total length measurements either upon a 10 percent sample of each group of organisms used for a test, or upon all of the surviving control test organisms after a test.

ii. The laboratory shall use test organisms collected from the sources listed in (e)1ii(1) through (4) below.

(1) Cladoceran used for toxicity tests shall be reared in the testing facility from laboratory cultures;

(2) Warm-water, estuarine and marine fishes and macrocrustaceans shall be obtained from commercial suppliers, hatcheries, or laboratory cultures. If such fishes or macrocrustaceans are not available from any such sources, they may be obtained from the wild;

(3) Cold-water fishes shall be obtained from commercial suppliers or hatcheries, certified disease-free (free of infections, pancreatic necrosis, furunculosis, kidney disease, and whirling disease);

(4) The laboratory shall not use organisms captured by the use of electroshocking, chemical treatment, and gill nets for either toxicity testing or culture brood.

iii. The laboratory shall determine the age of test organisms at the beginning of a toxicity test. The age of the test organisms shall satisfy the following requirements:

(1) *Daphnia magna* or *D. pulex* shall be neonates between one and 24 hours old;

(2) *Ceriodaphnia dubia* shall be less than 24 hours old;

(3) *Mysidopsis sp* shall be between one and five days old; and no more than a 24 hour range in age;

(4) *Pimephales promelas* and *Lepomis macrochirus* shall be one to 14 days old, and no more than a 24 hour range in age;

(5) The coldwater fishes shall be:

(A) *Oncorhynchus mykiss* - 15 to 30 days (after yolk sac absorption to 30 days).

(B) *Salvelinus fontinalis*-30 to 60 days

(C) *Salmo trutta*-30 to 60 days

(6) *Cyprinodon variegatus* shall be one to 14 days old; and no more than a 24 hour range in age;

(7) *Menidia menidia, M. peninsulae* and *M. beryllina* shall be nine to 14 days old, and no more than a 24 hour range in age; and

(8) *Palaemonetes pugio* shall be one to 60 days old.

2. The laboratory shall satisfy the following requirements in collecting test organisms for use in toxicity testing:

i. If using laboratory-reared specimens, report the original source and strain;

ii. If collecting organisms from the wild, or obtaining organisms from a commercial supplier or hatchery, report the time, place and method of collection, transportation, and handling;

iii. Do not collect organisms from areas known to be polluted;

iv. Do not collect organisms in poor condition, such as organisms that are diseased, parasitized, or exhibit deformities;

v. Collect macrocrustaceans and smaller fishes (with a total length of less than 30mm) near shore using dip nets or coarse plankton nets, or by hand. Collect larger specimens in seines. If the specimens are located offshore then trawls shall be used.

(1) To prevent organisms from being damaged during collection, short hauls with a duration of ten minutes or less shall be made with seines or trawls. The nets shall not collect debris that will injure the organisms;

(2) The seine bag shall be left in the water at the end of a haul. Organisms shall be dipped with a container from the bag and transferred directly to prepared holding tanks. Do not allow overcrowding of the animals. When trawling, bring the trawl up to the boat and over the side quickly without letting the catch hit the side of the boat. Immerse the portion of the net with the catch in it in a tank of water. Open the trawl, dip out organisms with a container or a small mesh hand net, and transfer to a holding tank;

(3) The water temperature, salinity, dissolved oxygen, and pH shall be determined at the collection site and recorded in a log. During transport to and acclimation in the laboratory, the organism holding tanks shall be aerated to ensure dissolved oxygen levels at or near saturation. Dissolved oxygen levels in the holding tanks shall not fall below 60 percent saturation. The holding tank water temperature shall be maintained within three degrees Celsius of the temperature of the water at the collection site at the time of collection for at least 24 hours;

(4) When collecting freshwater fish, between 0.1 and 0.3 percent table salt (NaCl) should be added to the holding tank water prior to the introduction of the collected specimens;

(5) Prophylactic treatments with antibiotics shall not be used; and

(6) Collected organisms shall be observed for injury. Injured organisms shall be discarded.

3. The laboratory shall use only test organisms that have been held, handled and conditioned in accordance with the following requirements:

i. All field-collected organisms shall be quarantined for at least fourteen days to observe for parasites and diseases, and to recover from the stress of collection and transport. Test organisms obtained from a culture source with demonstrated ability to supply healthy, disease-free stock shall be quarantined for at least two days. Organisms in culture in the testing facility do not need to be quarantined before use in a toxicity test. A log shall be kept documenting the test organism quarantine procedures used, recording the observations (physical measurements and biological) made, and recording any mortality;

(1) If during quarantine more than 10 percent of the organisms either die within two days of their arrival in the laboratory or if they suffer from parasites or diseases that cannot be controlled, the entire batch of organisms shall be destroyed. All containers and equipment that came in contact with the organisms shall be cleaned and sterilized before reuse by the procedures specified in (e)3i(2) below.

(2) To sterilize tanks, containers or equipment, the laboratory shall use at least a one-hour soaking in either a 200 mg/L sodium hypochlorite solution or a 0.5 percent solution of commercial chlorine bleach. The residual chlorine shall be removed by rinsing at least three times with either laboratory grade or laboratory pure water. Disinfection by autoclaving shall also be acceptable as specified in (c)3ii(3) above.

ii. After the quarantine period, disease-free organisms shall be acclimated to laboratory grade water and temperature, or to test dilution water and test temperature.

(1) Acclimation of fish and grass shrimp to either laboratory grade water or test dilution water shall be done by gradually and incrementally making no more than a 50 percent tank volume exchange of water in each holding tank per 12 hours over a 24 hour period;

(2) Mysids are collected from gravid females held in culture water at a salinity within two ppt of the dilution water to be used in the test and Cladoceran are transferred from stock cultures held in laboratory grade water to the test dilution water. No other acclimation would be necessary for these organisms;

(3) Changes in water temperature shall not exceed three degrees Celsius within a 24-hour period.

(4) Changes in salinity during acclimation shall not exceed 3 ppt in a 12-hour period.

iii. Organisms used in range-finding toxicity tests do not have to be acclimated to the test dilution water and test temperature prior to use in a test; the organisms shall have been acclimated to laboratory grade water and laboratory temperature for at least two days, in accordance with the procedures in (e)3ii(1) through (4) above.

iv. Organisms to be used in N.M.A.T. or N.O.A.E.C. definitive and definitive acute toxicity tests shall be acclimated to the test dilution water and the

test temperature prior to their use in the toxicity test. Acclimation shall be performed in accordance with the criterion stated in (e)3ii(1) through (4) above. If the organisms were held in laboratory grade water, and the laboratory grade water is to be used as test diluent water, and the holding temperature is identical to the test temperature, then acclimation is not necessary.

v. After the test organisms are acclimated to laboratory grade water and laboratory temperature, or to the test temperature and dilution water, the laboratory shall hold the test organisms under conditions of salinity and temperature that do not change more than specified in (e)3ii(3) and (4) above, for the following periods:

(1) Fish and grass shrimp shall be held for at least 24 hours prior to use in a test; and

(2) Cladoceran and Mysids do not have to be held any additional time prior to use in a test.

vi. If more than five percent of a group of test organisms dies during the acclimation and holding period, the laboratory shall take the following steps:

(1) For Cladoceran or Mysids, discard the group, and acclimate and hold a new group; and

(2) For fish or grass shrimp, either discard the group or hold it for an additional ten days in the test dilution water and at test temperature. If mortality for the group of organisms is more than three percent during the final 48 hours of the additional 10 days of holding, discard the entire group, and acclimate and hold a new group.

vii. The laboratory shall satisfy the following requirements in handling organisms:

(1) Follow culturing activities and procedures designed to minimize handling;

(2) Discard organisms that touch dry surfaces, are dropped, or are injured during handling;

(3) Do not use dip nets made of small mesh netting or cloth for organisms smaller than 0.01 grams each. Handle organisms smaller than 0.01 grams by a large-bore pipette;

(4) Use fire-polished smooth glass tubes or large-bore pipettes for transferring Cladoceran and Mysid;

(5) Clean and sanitize nets and other equipment used for handling organisms between uses;

(6) Analysts shall wash their hands with detergent leaving no toxic residue before handling or feeding organisms;

(7) Maintain dissolved oxygen concentrations in containers for holding fishes, mysids or grass shrimp between 60 percent and 100 percent of saturation. If there is danger of supersaturation with gases, keep the water in an open system, passed over baffles or otherwise aerated to bring it into equilibrium with the air;

(8) Thoroughly clean tanks and equipment regularly, removing or flushing out excessive growths and wastes.

(9) Remove all uneaten food from tanks and containers within 24 hours of feeding;

(10) Cover tanks and containers to prevent organisms from jumping out, unless the nature of the organism and the distance between the top of the water and the top of the container make it unlikely that the organisms can jump out;

(11) Shield tanks and containers to protect organisms from nearby movements and noise;

(12) In flow-through holding tanks without any form of biofiltration, maintain an exchange rate of at least two tank-volumes per 24 hours;

(13) In holding tanks with recirculation systems, maintain a flow of water through the biofiltration systems sufficient to ensure removal of excreted nitrogen compounds and excess suspended solids;

(14) Shrimp and bottom-dwelling fish may be provided with either a silica sand substrate or an oyster shell/crushed coral substrate in the holding tanks;

(15) Feed Cladoceran and coldwater freshwater fish until the beginning of a test, but not during the test. Feed mysids and grass shrimp before and during a test. Feed all warmwater freshwater and all saltwater fish before the beginning of the test and at two hours prior to the 48 hour renewal;

(16) Each day during holding and acclimation, observe organisms carefully for signs of disease, stress, damage, and mortality. Record observations in a log. Discard injured, dead and abnormal individuals; and

(17) Do not use organisms used in a test (including those used in a control treatment) in a subsequent test, or as culture stock.

4. The laboratory shall comply with the following procedures when culturing test organisms:

i. Maintain a daily log of organism feeding, behavioral observations, treatments, and mortalities;

ii. Feed all organisms, except for Cladoceran at least once per day;

iii. Destroy zooplankton and saltwater macrocrustaceans that become diseased or infested. If fishes are treated to either prevent or cure diseases, fungal infections or parasitic infections, with any material other than table salt (NaCl), the laboratory shall:

(1) If contamination with disease or parasites is suspected, disinfect the tanks, equipment and containers by one of the following:

(A) Soak for at least one hour with either a 200 mg/L solution of sodium hypochlorite or a 0.5 percent solution of commercial chlorine bleach, and then rinse at least three times with laboratory grade or pure water; or

(B) Rinse with either a 200 mg/L solution of sodium hypochlorite or a 0.5 percent solution of commercial chlorine bleach and then rinse at least three times with laboratory grade or pure water; or

(C) Autoclave using the procedures specified in (c)3ii(3) above;

(2) The laboratory shall not use in toxicity tests fish from tanks contaminated with parasites or disease, until:

(A) Seven days since the contamination have elapsed, and there is no evidence of disease; and

(B) Ten days have elapsed after all treatments are stopped.

iv. The Department recommends that a laboratory culturing test organisms use the applicable method listed in (e)4iv(1) through (7) below.

(1) The Department recommends that a laboratory culturing *Oncorhynchus mykiss, S. trutta, or Salvelinus fontinalis* do so in accordance with "Standardized Culturing Methods for Cold-water Fishes," NJDEP - #CM001.

(2) The Department recommends that a laboratory culturing *Pimephales promelas* do so in accordance with "Standardized Culturing Methods for the Fathead Minnow, *Pimephales promelas*" NJDEP - #CM002.

(3) The Department recommends that a laboratory culturing *Daphnia magna* or *D. pulex* do so in accordance with "Standardized Culturing Methods for *Daphnia magna* and *Daphnia pulex* and *Ceriodaphnia dubia*," NJDEP - #CM003.

(4) The Department recommends that a laboratory culturing *Cyprinodon variegatus* do so in accordance with "Standardized Culturing Methods for the Sheepshead Minnow," NJDEP - #CM004.

(5) The Department recommends that a laboratory culturing *Palaemonetes pugio* shall do so in accordance with "Standardized Culturing Methods for Grass Shrimp," NJDEP - #CM005.

(6) The Department recommends that a laboratory culturing *Menidia menidia, M. beryllina*, or *M. peninsulae* do so in accordance with "Standardized Culturing Methods for the Atlantic, Tidewater, and Inland Silversides," NJDEP - #CM006.

(7) The Department recommends that a laboratory culturing *Mysidopsis bahia* do so in accordance with "Standardized Culturing Methods for Mysid Shrimp," NJDEP - #CM007.

7:18-7.5 Acute toxicity testing methodology

(a) A laboratory shall not use an acute toxicity test experimental design unless it satisfies all applicable requirements of this section.

(b) When the purpose of a definitive acute toxicity test is to determine compliance with an LC_{50} or EC_{50} permit limitation, the test shall satisfy all of the following requirements:

1. The test shall include at least one control treatment, and a series of at least five effluent concentrations;

2. The laboratory shall perform each control treatment and each effluent concentration at least in duplicate, and shall conduct additional replicate series when necessary to achieve required test precision. The laboratory shall use only true replicates, with no water connections between test chambers;

3. If the toxicity of the effluent to the test organism is not known, the laboratory shall select concentrations that are evenly spaced on either a logarithmic scale or a geometric scale. The concentration of effluent in each treatment (except for the highest concentration and each control) shall be at least 50 percent of the next highest one;

4. If the toxicity of the effluent to the test organism is known approximately, the laboratory shall select concentrations of effluent that are evenly spaced (on either a logarithmic scale or geometric scale) around the expected LC_{50} or EC_{50}. Except for the highest concentration and each control(s), the test concentration shall be at least 60 percent of the next higher one. The use of a 100 percent effluent concentration is not required where the inclusion of such concentration is not within the expected range of the LC_{50};

5. Every toxicity test shall include a dilution water control treatment consisting of the same dilution water, conditions, procedures, type and number of organisms as used in the effluent treatments, except that the laboratory shall add none of the effluent being tested to the dilution water. Whenever the laboratory uses artificial sea salts to adjust the salinity of either the dilution water sample or effluent sample, an additional control treatment shall be included. This additional control treatment shall consist of replicate chambers containing only artificial saltwater, made with the same artificial sea salts used to adjust the samples. The artificial saltwater shall be made to the same standardized salinity and pH as the other test treatments; and

6. The laboratory shall expose at least 20 test organisms to each effluent concentration and each control treatment. For example, when the laboratory is conducting the test in duplicate, it shall expose at least 10 organisms per test chamber. The number of organisms used in each effluent concentration shall be equal to the number used in other effluent concentrations and to the number used in the control.

(c) When the effluent is known to generally have an LC_{50} of greater than or equal to 100 percent and the laboratory is conducting an N.M.A.T. definitive acute toxicity test for determining compliance with a "no measurable acute toxicity" permit limitation, the toxicity test design shall meet the following requirements:

1. The test series shall consist of at least one control treatment, and a series of at least five effluent concentrations;

2. The laboratory shall perform each control treatment and each effluent concentration at least in duplicate, and shall conduct additional replicate series when necessary to achieve required test precision. The laboratory shall use only true replicates, with no water connections between test chambers;

3. The laboratory shall expose at least 20 test organisms to each effluent concentration and each control treatment. For example, when the laboratory is conducting the test in duplicate, it shall expose at least ten organisms per test chamber. The number of organisms used in each effluent concentration shall be equal to the number used in other effluent concentrations and to the number used in the control; and

4. Every toxicity test shall include a dilution water control treatment consisting of the same dilution water, conditions, procedures, type and number of organisms as used in the effluent treatments, except that the laboratory shall add none of the effluent being tested to the control treatment. Whenever the laboratory uses artificial sea salts to adjust the salinity of either the dilution water sample or the effluent sample, an additional control treatment shall be included. This additional control treatment shall consist of replicate chambers containing only artificial saltwater, made with the same artificial sea salts used to adjust the samples. The artificial saltwater shall be made to the same standardized salinity as the other test treatments.

(d) When there is no historical aquatic toxicological data available on an effluent, the laboratory shall conduct a range-finding toxicity test to ascertain the range of effluent concentrations for subsequent definitive tests. The range-finding toxicity test shall satisfy the following requirements:

1. The range-finding toxicity test shall consist of one or more control treatments and at least four treatments which shall include a 100 percent effluent-by-volume, 50 percent effluent-by-volume and 12.5 percent effluent-by-volume. The laboratory shall use either a single test series or replicates;

2. Every range-finding test shall include a dilution water control treatment. This treatment shall consist of the same dilution water, conditions, procedures, type and number of organisms as used in the effluent treatment, except that none of the effluent being tested shall be added to the dilution water; and

3. Five or more test organisms shall be exposed to each control treatment and each effluent treatment.

(e) The laboratory shall conduct tests as either static, renewal or flow-through tests in accordance with the following:

1. The laboratory shall conduct the following as either a renewal test or a flow-through test:

i. Any definitive toxicity test with cold-water fishes, warm-water fishes, saltwater fishes or saltwater macrocrustaceans; and

ii. Any N.M.A.T. or N.O.A.E.C. definitive toxicity test with cold-water fishes, warm-water fishes, saltwater fishes or saltwater macrocrustaceans;

2. The laboratory shall conduct as either a static test or a flow-through test any range-finding toxicity test with coldwater fishes, warmwater fishes, saltwater fishes or saltwater macrocrustaceans; and

3. The laboratory shall conduct the following as a static test:

i. Any definitive toxicity test with freshwater zooplankton;

ii. Any N.M.A.T. or N.O.A.E.C. definitive toxicity test with freshwater zooplankton; and

iii. Any range-finding toxicity test with freshwater zooplankton.

(f) The laboratory shall conduct toxicity tests for the durations described below:

1. Cladoceran range finding toxicity test duration shall be at least 24 hours;

2. Cladoceran definitive toxicity test, N.O.A.E.C. and N.M.A.T. definitive toxicity test durations shall be 48 hours;

3. Mysid range-finding toxicity test duration shall be at least 24 hours;

4. Mysid definite toxicity test, N.O.A.E.C. and N.M.A.T. definitive toxicity test durations shall be at least 96 hours;

5. Grass shrimp range-finding toxicity test duration shall be at least 24 hours;

6. Grass shrimp definitive, N.O.A.E.C. and N.M.A.T. definitive toxicity test durations shall be at least 96 hours;

7. The duration of any range-finding toxicity test done with fishes shall be at least 24 hours; and

8. The duration of any definitive toxicity test with fishes or any N.M.A.T. or N.O.A.E.C. definitive toxicity test with fishes shall be at least 96 hours.

(g) Laboratories shall conduct toxicity tests with the test organisms randomly distributed to the test chambers by either of the two following methods:

1. Adding to each chamber no more than 20 percent of the total number to be assigned to each chamber, then repeating the process until each test chamber contains the total number of test organisms desired; or

2. Randomly assigning one test organism to each test chamber, then randomly assigning a second test organism to each test chamber, etc., continuing the random assignments until the total number of test organisms desired has been distributed to each test chamber.

(h) The laboratory shall maintain dissolved oxygen in the test chambers in accordance with the following requirements:

1. At all times during testing with cold-water fish species, the laboratory shall maintain dissolved oxygen at greater than 60 percent of saturation;

2. At all times during testing with other species, the laboratory shall maintain dissolved oxygen at greater than 40 percent of saturation;

3. In static and renewal acute toxicity tests, the laboratory shall gently aerate all test chambers if dissolved oxygen falls below 60 percent of saturation for the freshwater coldwater fishes or below 40 percent of saturation for the freshwater warmwater fishes and all saltwater species. If aeration is not going to be continuous, the laboratory shall stop aeration when dissolved oxygen reaches 100 percent of saturation for the freshwater coldwater fishes, or 60 percent of saturation for the freshwater warmwater fishes and all saltwater fishes;

4. In flow-through toxicity tests, the laboratory shall gently aerate all test chambers while maintaining the turnover rate if the dissolved oxygen falls below 70 percent of saturation for freshwater coldwater fishes, or below 50 percent of saturation for the freshwater warmwater fishes and all saltwater species. If aeration is not going to be continuous, the laboratory shall stop aeration when dissolved oxygen reaches 100 percent of saturation for the freshwater coldwater fishes or 60 percent of saturation for the freshwater warmwater fishes and for the saltwater species; and

5. In static testing with Cladoceran the laboratory shall measure dissolved oxygen either on the test solutions that are used in the acute toxicity test, or on a duplicate series of test solutions not containing test organisms. The laboratory shall perform zero hour of exposure measurements either upon an aliquot of the solutions being dispensed to the test chambers, or upon a duplicate series of test solutions set up as another replicate without test organisms. The laboratory shall measure dissolved oxygen for all test concentrations and the control at zero (0) and 48 hours. The laboratory shall measure dissolved oxygen at 24 hours for those test concentrations where there is 100 percent mortality or immobilization. The laboratory shall not aerate Cladoceran test chambers under any circumstances, even if dissolved oxygen levels fall below 40 percent of saturation.

(i) The laboratory shall maintain test temperatures in accordance with the following requirements:

1. Freshwater organisms shall be tested at the following temperatures:

   i. Cold-water fishes shall be tested at 12 degrees Celsius; and

   ii. Warm-water fishes and freshwater zooplankton shall be tested at 20 degrees Celsius;

2. Saltwater organisms shall all be tested at 20 degrees Celsius.

3. The laboratory shall maintain the temperature of test solutions within 2.0 degrees Celsius of the required test temperature.

(j) The laboratory shall test sheephead minnow, inland silverside, grass shrimp, and Mysid at a salinity of five ppt to 32 ppt, 10 percent. The laboratory shall test the tidewater silverside and Atlantic silverside at a salinity of 15 ppt to 32 ppt, 10 percent. A standardized salinity should be 25 ppt one ppt for all saltwater organisms.

(k) The laboratory shall provide test organisms with light during testing in accordance with the following requirements:

1. The laboratory shall provide Cladoceran with wide spectrum light at an intensity of 50 to 100 foot candles, measured at the surface of the test chamber solutions. The photoperiod shall be a steady 16 hours light and eight hours dark;

2. The laboratory shall provide *Mysidopsis sp*. and *Palaemonetes pugio* with wide spectrum light at an intensity of 50 to 100 foot candles measured at the surface of the test chamber solutions. The photoperiod shall be a steady 14 to 16 hours light and eight to 10 hours dark; and

3. The laboratory shall provide freshwater and saltwater fishes with wide spectrum light at an intensity of 50 to 100 foot candles, measured at the surface of the test chamber solutions. The photoperiod shall be a steady 14 to 16 hours light and eight to 10 hours dark.

(l) For static or renewal toxicity tests the test organism loading shall not exceed the following:

1. Loading of grass shrimp and coldwater, warmwater, and saltwater fishes shall not exceed 0.65 g/L of test solution;

2. Loading of Cladoceran shall not exceed one daphnid per 20 ml of test solution;

3. Loading of Mysids shall not exceed one mysid per 40 ml of test solution.

(m) For flow-through toxicity tests the test organism loading shall not exceed the following:

1. Loading of grass shrimp and coldwater, warmwater, and saltwater fishes shall not exceed five g/L of test solution; and

2. Loading of Mysids shall not exceed one mysid per 20 ml of test solution.

(n) The laboratory shall take organisms for use in testing only from groups that meet the requirements in N.J.A.C. 7:18-7.4(e)3vi concerning mortality during acclimation and holding.

(o) When an effluent discharged to estuarine or marine waters consists of adulterated freshwater, the laboratory shall adjust the salinity of the effluent only in accordance with the following:

1. When using effluent concentrations greater than 75 percent effluent-by-volume, the laboratory shall adjust the salinity of the effluent test concentrations by using artificial sea salts. In the case of effluent/dilution water mixtures, the laboratory shall add the salts to the effluent either before or after the effluent and dilution water sample aliquots are mixed;

2. When using effluent concentrations less than or equal to 75 percent effluent-by- volume, the laboratory shall adjust the salinity of the effluent test concentrations by using either a hypersaline brine that is prepared in compliance with N.J.A.C. 7:18-7.4(b)8, or dry artificial sea salts. The laboratory shall make the adjustments either before or after the effluent and dilution water samples are mixed; and

3. When a laboratory is using artificial sea salts to adjust the freshwater effluent salinity and the pH of the test concentration to which the artificial sea salts were added drifts more than 0.5 pH units from the initial pH, the laboratory shall also adjust the pH of the test concentration to within 0.5 pH units of the pH of the original test concentration by using NaOH or HCl. The laboratory shall document and report adjustments and treatments of the effluent along with the test results. The laboratory shall include in the documentation the name and amount of reagent used to adjust the pH, and the pH before and after pH adjustment.

(p) To initiate a static or renewal test, the laboratory shall place the test organisms in the test chambers within 30 minutes after the effluent is added to the dilution water.

(q) To initiate a flow-through test, the laboratory shall place the test organisms in test chambers after the dilutor system has been calibrated, with the dilution water and effluent, and the test solutions have been flowing through the test chambers for a period of 24 hours at a rate which ensures five 90 percent replacements of water volume in each test chamber. During this period, the laboratory shall make all necessary adjustment to flow rate, temperature, and aerations.

(r) The laboratory shall feed test organisms during toxicity testing in accordance with N.J.A.C. 7:18-7.4(e)3vii(15) and the following requirements:

1. The laboratory shall feed Cladoceran and freshwater coldwater fish up to but not during acute toxicity testing;

2. The laboratory shall feed mysids and grass shrimp up to and during acute toxicity testing. During testing, the laboratory shall feed the mysids and grass shrimp at a rate of 0.1 mL concentrated hatched *Artemia* per mysid and grass shrimp twice daily, which is approximately 100 brine shrimp nauplii/mysid/day; and

3. The laboratory shall feed warmwater, freshwater and saltwater fish up to the beginning of the acute toxicity test. During testing, the laboratory shall feed the fish at a rate of 0.2 mL concentrated *Artemia* two hours prior to the 48 hour test solution renewal.

(s) The laboratory shall collect biological data and make biological observations in accordance with the following requirements:

1. To determine the effluent's EC_{50} in acute toxicity tests with Cladoceran, the laboratory shall observe and record the organisms' immobilization, defined as the inability to move the appendages when gently prodded;

2. To determine the effluent's LC_{50} in acute toxicity tests with all fishes, mysids and grass shrimp, the laboratory shall measure death, defined as no movement of any kind, especially the absence of respiratory movements, and no reaction to gentle prodding;

3. The laboratory shall count the number of dead or affected organisms in each test chamber at each 24 hour exposure interval throughout the test, and, to intercept potential problems, these observations should occur at least twice daily;

4. The laboratory shall remove dead organisms from test chambers at least each time dead or affected organisms are counted;

5. The laboratory shall observe the test organisms' appearance and behavior at least daily, and record the observations on the acute toxicity test bench sheet(s) using the applicable terms or codes in Table 7.5(s).

TABLE 7.5(s)
TERMS AND CODES FOR TEST ORGANISMS' APPEARANCE AND BEHAVIOR

TERM	**EXPLANATION**	**CODE**
Normal	Unaffected	1
Inactive	Abnormally low activity, motionless or nearly so, weak and enfeebled	2
Irritated	Hyperactivity, muscle spasms, erratic swimming	3
Surfacing	Rising and remaining unusually long at the surface	4
Abnormal Body Orientation	Inverted or turned approximately 90° laterally from normal body position	5
Abnormal Skin Color	Light discolored, dark discolor or varidiscoloredd (mottled)	6
Abnormal Skin Condition	Mucus shedding or coagulations, hemorrhaging from gills, eyes or anal opening	7
Abnormal Respiration	Rapid, slow, gulping or periodic flexure of the operculum of fish as to reverse water flow (coughing)	8

6. The laboratory shall not stress live organisms when determining whether test organisms are dead, immobilized, or otherwise affected, and when removing dead organisms. Any movement of test chambers and any prodding shall be done very gently.

7. The laboratory shall determine the weights and lengths of test fish and grass shrimp by weighing, measuring and discarding at least a 10 percent sample of the batch of organisms to be used in the test, or by weighing and measuring the surviving control organisms after the test. For test fish, the laboratory shall determine the total length; for grass shrimp, the laboratory shall measure from rostrum to telson.

(t) The laboratory shall collect and analyze chemical and physical data in accordance with the following requirements:

1. The laboratory shall analyze all chemical and physical parameters (excluding salinity) under this subchapter in accordance with the requirements set forth in 40 CFR 136 and N.J.A.C. 7:18-5.3;

2. The laboratory shall compute salinity based on chlorinity, electrical conductivity, or refractive index;

3. If an effluent has exhibited, or is known to exhibit, a high dissolved oxygen demand, the laboratory shall monitor dissolved oxygen at the following frequency except as provided in (t)5 below:

   i. For the first four hours of testing, once every two hours in all of the control and effluent test chambers; and

   ii. After the first four hours of testing, at least once daily in each test chamber in which there are living test organisms;

4. If the effluent has not exhibited, nor is known to exhibit, a high dissolved oxygen demand, the laboratory shall monitor dissolved oxygen at least once every 24 hours in all of the control and effluent test chambers, except as provided in (t)5 below;

5. When testing with Cladoceran, the laboratory shall monitor dissolved oxygen in accordance with N.J.A.C. 7:18-7.5(h)5;

6. When a laboratory conducts a toxicity test in either a constant temperature area or water bath:

   i. The laboratory shall measure and record the temperature of the area or bath when the test is initiated, at least once every six hours during the test, and upon termination of the test;

   ii. When testing with Cladoceran, the laboratory shall measure and record the temperature in a blank test chamber (a chamber without test organisms), at least daily;

   iii. When testing with fish, grass shrimp or Mysids, the laboratory shall measure and record the temperature in each test chamber, including the control exposure;

7. When a toxicity test is <u>not</u> conducted in a constant temperature area or water bath, the laboratory shall measure and record the temperature in at least one control test chamber and one effluent concentration test chamber at least hourly throughout the test. The laboratory shall measure and record the other test chamber temperatures at least once daily throughout the test;

8. A laboratory performing a static acute toxicity test shall collect the following chemical and physical data, in addition to the data described in (t)1 through 7 above:

   i. In toxicity tests using freshwater dilution water, just before initiating the test the laboratory shall measure and record hardness, pH, total residual chlorine (when detected initially in either the dilution water or effluent sample) and specific conductance. If the laboratory is performing definitive testing with Cladoceran, it shall also measure and record the above information upon the termination of the test. For all tests, the laboratory shall make these measurements on aliquots of the same test solutions used to set up the test initially; and

ii. In toxicity tests using saltwater dilution water, just before initiating the test the laboratory shall measure and record pH, salinity, and total residual chlorine (when detected initially in the effluent sample). For all tests, the laboratory shall make these measurements on aliquots of the same test solutions used to set up the test initially;

9. A laboratory performing a flow-through or renewal toxicity test shall collect the following chemical and physical data, in addition to the data described in (t)1 through 7 above:

i. In toxicity tests using a freshwater dilution water, the laboratory shall measure and record just before test initiation pH, hardness, total alkalinity, total residual chlorine (when detected initially in either the dilution water or effluent sample) and specific conductance. In addition, the laboratory shall measure and record the pH and specific conductance once every 24 hours during the test, and upon termination of the test in at least one set of replicate chambers that includes the control and all effluent concentrations. Also once every 24 hours during the test, the laboratory shall measure and record the hardness, total alkalinity, and residual chlorine (when detected initially in either the dilution water or effluent sample) once every 24 hours during the test, and upon termination of the test in at least one set of replicate chambers that includes the control and the highest effluent concentration. The laboratory shall take all the measurements either upon aliquots of the same test solutions of upon aliquots taken from the test chambers.

ii In toxicity tests using saltwater dilution water, the laboratory shall measure and record just before test initiation pH, total alkalinity, total residual chlorine (when detected initially in either the dilution water or effluent sample), and salinity. In addition, the laboratory shall measure and record the pH and salinity once every 24 hours during the test, and upon termination of the test in at least one set of replicate chambers that includes the control and all effluent concentrations. Also once every 24 hours during the test, the laboratory shall measure and record the total alkalinity and total residual chlorine (when detected initially in either the dilution water or effluent sample) once every 24 hours during the test and upon termination of the test in at least one set of replicate chambers that includes the control and the highest effluent concentration. The laboratory shall take all measurements either upon aliquots of the same test solution or upon aliquots taken from the test chambers.

(u) A laboratory conducting an N.O.A.E.C. definitive acute toxicity test for determining compliance with a "no observed adverse effect concentration" permit limitation shall design the toxicity test in accordance with the following requirements:

1. The laboratory shall include in the test at least one control treatment, and a series of at least five effluent concentrations;

2. The laboratory shall conduct the test with two replicates. The laboratory shall use only true replicates, with no water connections between test chambers;

3. The laboratory shall expose 10 test organisms per chamber to each effluent concentration;

4. The laboratory shall include in every toxicity test a dilution water control treatment consisting of the same dilution water, conditions, procedures type and number of organisms as used in the effluent treatments, except that the laboratory shall add none of the effluent being tested to the control treatment. Whenever the laboratory uses artificial sea salts to adjust the salinity of either the dilution water sample or the effluent sample, an additional control treatment shall be included. This additional control treatment shall consist of replicate chambers containing only artificial saltwater, made with the same artificial sea salts used to adjust the samples. The artificial saltwater shall be made to the same standardized salinity as the other test treatments; and

5. The laboratory shall expose at least 20 test organisms to each control treatment and each effluent treatment.

7:18-7.6 Calculating, analyzing and reporting of quantal test results

(a) A toxicity test is invalid if any of the conditions listed in (a)1 through 5 below occurs. When a toxicity test is invalidated, the laboratory shall clearly mark the test results accordingly. The laboratory shall submit the results to the Department, along with a written explanation as to the reason for the invalidation and the expected date that the test will be repeated. If a toxicity test is invalidated, the laboratory shall repeat the test as soon as possible within the monitoring period specific in the permit. A toxicity test is invalid if:

1. In an N.M.A.T. or N.O.A.E.C test, mortality of the control test organisms exceeds 10 percent;

2. In tests determining either an EC_{50} or an LC_{50}, greater than 10 percent of the control test organisms either show the effect or exhibit mortality;

3. In definitive tests determining an LC_{50} or an EC_{50}, after pooling replicate test chamber responses two or more test concentrations deviate significantly from the expected trend of increasing effluent concentrations exhibiting increasing levels of toxicity. Deviation in response from the expected trend of greater than 10 percent (mortality for an LC_{50}, or effect for an EC_{50}) shall be considered to be significant;

4. The 95 percent confidence limits cannot be calculated for a test which results in an LC_{50} or EC_{50} that is either less than the highest effluent concentration tested, or greater than the lowest effluent concentration tested. However, the test need not be invalidated if the calculated LC_{50} or EC_{50} lower confidence limit is $\geq$ 30 percent of the highest effluent concentration tested and the upper confidence limit is a positive infinity; or

5. The laboratory is unable to calculate 95 percent confidence limits when required under (b)4ii below.

(b) A laboratory shall satisfy the requirements of (b)1 through 6 below when calculating toxicity test results.

1. The laboratory shall not use biological test results from N.M.A.T. definitive acute toxicity tests to calculate an LC_{50} or EC_{50}. For all effluent concentrations and the control, the laboratory shall report the number and percentage of dead test organisms or those showing the effect.

2. The laboratory shall express the biological test results from range-finding acute toxicity tests in terms of an LC_{50} or EC_{50} whenever the data support the estimation. The laboratory shall estimate the LC_{50} or EC_{50} by the graphical method described in EPA Acute Methods #027F-1993.

   i. When the highest effluent concentration kills or affects less than 50 percent of the test organisms, the laboratory shall record the number of organisms showing the response in each treatment; and

   ii. When the lowest concentration kills or affects more than 80 percent of the test organisms, the laboratory shall repeat the range-finding test with a lower set of effluent concentrations, before conducting the definitive toxicity test.

3. The laboratory shall express the biological test results from definitive acute toxicity tests in terms of an estimated LC_{50} or EC_{50}, except when no toxicity is observed. The laboratory shall report the numbers and percentages of test organisms dying (for LC_{50}) or showing the effect (for EC_{50}) for each test chamber.

   i. When more than 50 percent of the test organisms die (for LC_{50}) or show the effect (for EC_{50}) in the lowest effluent concentration, the laboratory shall report an LC_{50} or EC_{50} of less than the lowest concentration;

   ii. When less than 50 percent of the test organisms die (for LC_{50}) or show the effect (for EC_{50}) in the highest effluent concentration, the laboratory shall report an LC_{50} or EC_{50} of greater than the highest concentration;

4. When the results of a definitive acute toxicity test falls between the two extremes given in (b)3i and ii above, the laboratory shall calculate LC_{50} and EC_{50} values using the following methods and procedures:

   i. The laboratory shall calculate LC_{50} and EC_{50} for at least the final exposure time and each 24 hour exposure time between the beginning and the end of the test. For example, in a test with a 96-hour duration, the laboratory would calculate LC_{50} or EC_{50} 24, 28, 72 and 96 hours after the beginning of the test;

   ii. The laboratory shall calculate 95 percent confidence limits for each definitive acute toxicity test LC_{50} or EC_{50}. If the laboratory cannot do so, the test shall be invalid in accordance with (a)5 above. This requirement does not apply to any toxicity test that results in an LC_{50} or EC_{50} that has:

      (1) Greater than or equal to the highest effluent concentration tested; or

(2) Less than or equal to the lowest effluent concentration tested; or

(3) No partial mortalities.

iii. If any acute toxicity test results in no partial mortalities, the LC_{50} or EC_{50} is determined using the Graphical Method as described in EPA Acute Methods #027F-1993;

iv. If any acute toxicity test results in two or more partial mortalities and a non-significant Chi Square Test, the LC_{50} or EC_{50} and corresponding 95 percent confidence intervals are determined using the Probit Method as described in EPA Acute Methods #027F-1993.

v. The Spearman-Karber Method, as described in EPA Acute Methods #027F-1993, is used to determine the LC_{50} or EC_{50} and corresponding 95 percent confidence intervals for any acute toxicity test if the following conditions apply:

(1) Zero mortality in the lowest effluent concentration and 100 percent mortality in the highest effluent concentration, and;

(2) One partial mortality, or:

(3) Two or more partial mortalities and a significant Chi Square Test.

vi. If the conditions in (b)4iii, iv, or v do not apply, the LC_{50} or EC_{50} and corresponding 95 percent confidence intervals for any acute toxicity test are determined using the Trimmed Spearman-Karber Method as described in EPA Acute Methods #027-1993.

5. Upon completing a definitive acute toxicity test for which LC_{50} or EC_{50} can be calculated, the laboratory shall plot a toxicity curve. The laboratory shall plot the curve using the LC_{50} or EC_{50} for each observation time, following the methodology presented in "Standard Methods, 16th Edition" p. 717. The laboratory shall report any threshold or incipient LC_{50} that it can estimate from the curve. If the laboratory finds no threshold or incipient LC_{50}, the laboratory shall report this fact. In either case the laboratory shall include the toxicity curve graph in the report of results whenever the data permit it to be plotted.

6. For all effluent concentrations and the control, the laboratory shall determine the N.O.A.E.C. using the hypothesis testing as described in section 11.3 of EPA Acute Methods #027F-1993.

(c) The laboratory shall follow the following requirements when reporting results of acute toxicity tests:

1. The laboratory shall complete a sample report immediately after collecting either dilution water or effluent samples. The laboratory shall make the report either as a separate form or as an entry in a bound logbook. The laboratory shall include the sample report data in its report of the toxicity test results to the Department. The laboratory shall include the following information in the sample report:

i. The sampling location;

ii. Date and time of collection;

iii. Total residual chlorine level in the sample;

iv. The type of sample (composite or grab);

v. The material sampled;

vi. The collector's name; and

vii. Any pertinent comments.

2. The laboratory shall include the following types of information when reporting results of an acute toxicity test:

i. The name of the test, the investigator(s), and the laboratory;

ii. The date on which the test began;

iii. The name of NJPDES permittee, its location, its NJPDES permit number, and the Discharge Serial Number;

iv. The name of the receiving water body;

v. A detailed description of the effluent, including the sampling point, date and time of collection, known physical and chemical properties, and variability;

vi. A detailed description of the dilution water source, the sample location, the date and time of sample collection, the tide stage (if applicable), the dilution water chemical characteristics, and any pretreatment;

vii. A description of acute toxicity test method(s) used, including:

(1) The test protocol, a definition of the adverse effect (death, immobility, etc.) used in the test, a description of the test chambers used (including the depth and volume of test solution), the number of test organisms per replicate treatment, the number of replicate treatments, and the loading rate of the test organisms. In flow-through toxicity tests the report shall also include the number of water volume exchanges per 24 hours in each test chamber;

(2) Detailed information about the test organisms, including the scientific name, mean and ranges of length and weight (where appropriate), age, life stage, source, previous history (if known), observed disease, treatments (if any), record of acclimation procedure, and observations on behavior during the test;

(3) A description of any aeration or salinity adjustments performed on test solutions before or during the test;

(4) The methods used for all chemical analyses;

(5) The mean and range of the acclimation temperature, test temperature, and salinity; and

(6) Any deviations from the test method(s);

viii. The test results, including the following:

(1) The results of all chemical analyses of the effluent and dilution water;

(2) A daily record of the number and percentages of organisms in each test chamber, including the control treatments, that died or showed the selected effect;

(3) A summary of general observations of other effects of symptoms of toxicity observed during the test;

(4) The LC_{50} or EC_{50} value with specified exposure time and the 95 percent confidence limits. If the highest effluent concentration did not kill or affect 50 percent or more of the test organisms, report the LC_{50} or EC_{50} as greater than the highest concentration and the percentage of test organisms killed or affected in each experimental treatment. If the lowest effluent concentration killed or affected more than 50 percent of the test organisms, report the LC_{50} or EC_{50} as less than the lowest concentration and the percentage of test organisms killed or affected in each experimental treatment. Report the method(s) used to calculate the LC_{50} or EC_{50}, and its 95 percent confidence limits. Include a graph of the toxicity curve;

(5) Any deviations from approved methodology, along with a summary of the reason(s) for the deviation(s); and

(6) Any other relevant information; and

ix. Upon completing the toxicity test, the laboratory shall send the original or true duplicate of the results to the client. The original or true duplicate shall be signed by the laboratory manager or a designee identified under N.J.A.C. 7:18-2.11(a)1iii.

7:18-7.7 Laboratory quality control and record keeping

(a) A laboratory performing acute toxicity testing shall develop and implement a quality control program. The laboratory shall not perform acute toxicity testing without having such a program. The laboratory shall have a written description of its program on file and be able to produce a copy during an on-site inspection. The written description shall include all methods manuals used for culturing test organisms, and all testing protocols used by the laboratory. The quality control program description, or standard operating procedures (SOP) manual, shall be specific to the operations of the laboratory and not a generalized document.

(b) The laboratory shall make records of all analytical control tests and quality control checks on equipment and materials. The laboratory shall maintain the records for at least five years. The laboratory shall file and maintain data and other records in an accessible location on the laboratory's premises for one year after the date of analysis so that reviews can be conducted during on-site audits.

(c) If the laboratory discovers an error in the analysis of a regulatory sample, and the error may affect the validity of the reported analytical result, the environmental laboratory manager shall report the error to the regulatory program for which the analysis was conducted, and to the client. The laboratory shall make this notification within 72 hours after discovery of the error.

(d) Laboratories performing acute toxicity testing shall comply with the following requirements when performing quality control checks of laboratory media, equipment, and supplies:

1. Operate each pH meter in accordance with N.J.A.C. 7:18-3.3(a)3. Rinse the probe with laboratory pure water immediately after each use period. Label commercial buffer solutions with the date of receipt and the date of initial use;

2. Operate top loader or pan balances in accordance with N.J.A.C. 7:18-3.3(a)2;

3. Verify all temperature measuring devices using the procedures listed in N.J.A.C. 7:18-3.3(a)5;

4. The temperature of air or water-jacketed incubators, aluminum block incubators, water baths, and incubator rooms shall be recorded either continuously or daily from in-place thermometers immersed in liquid and placed on at least one of the shelves in use. Keep the records in a log book, signed and dated by the analyst;

5. Record date, time, pressure and temperature of an autoclave either continuously, or individually during each sterilization cycle. Keep the records in a log book, signed and dated by the analyst;

6. The time and temperature of hot air ovens shall be measured with a thermometer either continuously or individually during each cycle, with the bulb of the thermometer placed in sand. Record the date, time and temperature of each cycle. Keep the records in a log book, signed and dated by the analyst;

7. Monitor the temperature of each refrigerator in accordance with the procedures listed in N.J.A.C. 7:18-3.3(a)7;

8. Label all reagents and solutions to indicate identity and, when applicable, titer, strength or concentration, manufacturer's recommended storage requirements, preparation and expiration date, and other information pertinent to identification. Do not use materials of substandard reactivity or deteriorated materials. Discard all outdated material immediately;

9. At least annually, check conductivity and salinity meters equipped with conductivity cells having platinum electrodes. Perform the check over the range of interest using at least five concentrations of a standard potassium chloride solution. Check conductivity cells not having platinum electrodes against a conductivity meter equipped with platinum electrodes. Perform

this check annually and record the raw data, cell constant, and results in a logbook, signed and dated by the analyst; and

10. Check dissolved oxygen meters weekly, using the Winkler method. Record the results in a logbook signed and dated by the analyst.

(e) Only the laboratory manager, supervisor or quality assurance officer is authorized to make changes in laboratory procedures. Changes are effective only if:

1. The change is made by the manager, supervisor or quality assurance officer of the laboratory;

2. The manager, supervisor or quality assurance officer makes the change in writing, signed and dated by the manager, supervisor or quality assurance officer and includes the change in the laboratory's SOP manual.

(f) A laboratory shall not perform acute toxicity tests unless it keeps current laboratory SOP and reference manuals in the immediate bench area of laboratory personnel engaged in examining samples and performing toxicity testing and other related procedures. The laboratory may use textbooks to supplement the manuals, but shall not replace the manuals with the textbooks. The manuals shall include information relating to:

1. The analytical methods to be used, properly designated and dated to reflect the most recent supervisory reviews; and

2. Any applicable regulations.

(g) A laboratory conducting a flow-through toxicity test shall check the temperature in the exposure chambers, the flow rate through the exposure chambers, and the maintenance of effluent concentrations. The laboratory shall conduct these checks when the test is initiated, at least once every 24 hours for the duration of the test, and upon completion of the test. The laboratory shall document these measurements, and any resulting adjustments to the flow-through dilutor system, in the toxicity test report.

(h) A laboratory performing an acute toxicity test shall establish an acute toxicity test precision requirement that the 95 percent confidence interval be within 30 percent of the estimated or incipient EC_{50} or LC_{50} value.

(i) A laboratory performing acute toxicity tests shall keep records and report data in accordance with the requirements of (i)1 and 2 below. The records to be retained include raw data records, quality control data records, chain-of-custody forms, laboratory reports, and the information required under (i)2 below.

1. The laboratory shall retain each record for at least five years after the date of the analysis. The laboratory shall file and maintain data and other records in an accessible location on the laboratory's premises for one year after the date of analysis so that reviews can be conducted during on-site audits.

2. The laboratory shall record the following information as part of the daily log of feeding, behavioral observations, and mortality of organisms during holding and acclimation:

i. Water temperature of holding tanks;

ii. Air temperature in culturing/holding room;

iii. Mortalities or organisms per holding tank;

iv. Analysis of laboratory grade waters as specified in N.J.A.C. 7:18-7.4(b);

v. The food and feeding schedule; and

vi. General observations of behavior and condition.

(j) The laboratory shall not accept custody of regulatory samples unless a chain-of-custody form is submitted with the samples, in accordance with N.J.A.C. 7:18-9.5(c).

1. Before accepting custody of a regulatory sample, the laboratory shall determine that the sample is properly labeled and has been collected, preserved, processed, stored and transported in accordance with the provisions of this subchapter. If the sample fails to meet those requirements, the laboratory shall indicate that failure on the chain-of-custody section of the sample request form or the chain-of-custody form;

2. The laboratory's sample custodian accepting responsibility for the sample shall sign the chain-of-custody form;

3. The laboratory shall have an internal chain-of-custody procedure or an alternate sample tracking procedure which establishes the integrity and completely tracks the custody of a sample during its lifetime in the laboratory; and

4. If the analysis was not performed at the environmental laboratory that first received the sample, the chain-of-custody form shall include the name, address and identification number of the New Jersey certified environmental laboratory to which the sample was forwarded.

(k) If a laboratory violates any of the requirements of this subchapter in the process of performing an acute toxicity test, the laboratory shall prefix the test result, i.e. LC_{50} or EC_{50} value, with the letter "J," and describe the violation in the "remarks" section of the test report.

SUBCHAPTER 8 ANALYZE-IMMEDIATELY AND CONTINUOUS MONITORING ENVIRONMENTAL MEASUREMENTS

7:18-8.1 Scope and general requirements

(a) This subchapter applies to certified environmental laboratories when performing analyze-immediately and continuous monitoring environmental measurements on regulatory samples, and to other laboratories performing analyze-immediately and continuous monitoring environmental measurements on PT samples to become certified. This subchapter applies to environmental measurements of parameters in the following categories (including but not limited to chlorine dioxide, dissolved oxygen with probe, pH, ozone, residual chlorine, sulfite and temperature):

1. Drinking Water Matrix - Category DW04, Analyze-Immediately (<15 min) and Continuous Monitoring; and

2. Non-Potable Water Matrix - Category NPW04, Analyze-Immediately (< 15 min) and Continuous Monitoring.

(b) In addition to satisfying the applicable requirements of N.J.A.C. 7:18-1 through 3, a laboratory performing analyze-immediately and continuous monitoring environmental measurements within the scope of (a) above shall follow:

1. All applicable requirements in this subchapter; and

2. All requirements specified in the applicable DSAMs, including without limitation any requirements that are more stringent than the requirements in this subchapter.

(c) A laboratory performing environmental measurements of a sample for analyze-immediately parameters listed in (a)1, or 2 above shall analyze the sample within 15 minutes after collection. The laboratory may perform the analysis in the field, in an on-site mobile laboratory, or in a facility laboratory (such as a laboratory at a wastewater treatment plant).

7:18-8.2 Requirements for environmental laboratory equipment, supplies and materials

The supervisor shall have control over the equipment, supplies and materials used in analyze-immediately and continuous monitoring testing and analysis of regulatory samples. The equipment, supplies and materials shall be sufficient to perform those tests and analyses, and shall meet the requirements of N.J.A.C. 7:18-3, N.J.A.C. 7:18-5, and the applicable DSAM.

7:18-8.3 Required use of techniques specified in DSAMs

(a) In performing an analyze-immediately and continuous monitoring analysis of a regulatory sample (including, without limitation, analysis of a PT sample by a laboratory that is applying to become certified), a laboratory shall use only:

1. A DSAM from the applicable Category listed in N.J.A.C. 7:18-8.1(a) for which the laboratory is certified; or

2. An ATP approved by the Department for the laboratory and, if applicable, for the facility in question.

(b) The requirements of (a) above do not apply to the analysis of a non-regulatory sample, if the requirements of N.J.A.C. 7:18-2.22(b) are satisfied.

7:18-8.4 Requirements for quality assurance/quality control program

(a) The laboratory shall develop and keep current a quality assurance/quality control manual. The laboratory shall not perform analyses of regulatory samples without having a current quality assurance/quality control manual covering the analysis in question. In the manual, the laboratory shall describe the following:

1. The procedures that the laboratory will use in meeting the quality control requirements of this subchapter, N.J.A.C. 7:18-3 and 5, and all applicable DSAMs, including without limitation requirements pertaining to laboratory equipment and instrumentation, supplies, and the frequency with which such procedures shall be performed; and

2. The frequency with which the laboratory will perform the procedures listed pursuant to (a)1 above.

(b) The laboratory shall develop and implement a written methods manual containing a standard operating procedure (SOP) for each DSAM, in accordance with the criteria and procedures of the DSAM and this chapter. A laboratory shall not perform analyses using a DSAM unless it has developed and implemented such an SOP for the DSAM.

1. The laboratory shall update the manual to reflect any changes in the procedures practiced by the laboratory.

2. The laboratory shall keep copies of the methods manual in the immediate bench area of personnel engaged in the analysis of samples and related procedures within the Chemical Testing Categories.

3. In the manual, the laboratory shall properly designate by revision number and date the standard operating procedure (SOP) for a specified analytical method for a particular type of analysis.

4. Changes to SOPs are effective only if:

   i. The change is made by the manager, supervisor or quality assurance officer of the laboratory; and

   ii. The manager, supervisor or quality assurance officer makes the change in writing, signed and dated by the manager, supervisor or quality assurance officer.

(c) A laboratory performing analyze-immediately and continuous monitoring environmental measurements shall conduct the quality control checks specified in the applicable DSAMs.

7:18-8.5 Requirements for records and data reporting

(a) The laboratory shall retain records concerning analyze-immediately and continuous monitoring analyses. The records to be retained include raw data records, quality control data records, chain-of-custody forms, laboratory reports, and the information required under (d) below. The laboratory shall retain each record for at least five years after the date of the analysis, provided, however, that the laboratory shall retain records of analyses for 10 years if the person requesting the analyses has informed the laboratory that the analyses were to be performed because of epidemiological or public health concerns.

(b) The laboratory shall file and maintain data and other records in an accessible location on the laboratory's premises for one year after the date of analysis so that reviews can be conducted during on-site audits.

(c) The laboratory shall retain the following information as part of the records of analysis:

1. The assigned laboratory sample number or other unique form of identification;

2. The date and time of sample analysis;

3. The name and signature of the person or persons who collected the sample;

4. The name and signature of the person or persons who analyzed the sample;

5. The type of analysis performed and the DSAM used; and

6. The results of the analysis and the raw data generated by the analysis.

(d) The laboratory shall check all results reported on final report forms against original data to make sure there are no transcription errors.

(e) The laboratory shall include the following information in reporting results to the client:

1. Certified environmental laboratory name and New Jersey laboratory identification number;

2. The date, time, and location of sample collection and sample analysis;

3. The type of analysis performed and the analytical method employed;

4. The results generated by the analysis; and

5. The name and signature of the environmental laboratory manager or designee identified under N.J.A.C. 7:18-2.11(a)1iii.

(f) The laboratory shall not report results of analyses to the Department or to any other person unless the original or true duplicate of the results is sent to the client. The report shall be signed by the laboratory manager or designee identified under N.J.A.C. 7:18- 2.11(a)1iii.

SUBCHAPTER 9 SAMPLE REQUIREMENTS

7:18-9.1 Scope and general requirements

(a) This subchapter applies to certified environmental laboratories when:

1. Handling and preserving regulatory samples for microbiological, inorganic, organic, radiochemical, and acute toxicity testing;

2. Collecting regulatory samples for acute toxicity testing;

3. Accepting regulatory samples that have been collected, handled or preserved by persons other than the laboratory; and

4. Collecting, handling, preserving and accepting samples for compliance with the PWTA.

(b) If the laboratory is collecting, handling or preserving regulatory samples within the scope of (a) above, the laboratory shall comply with the requirements of this subchapter. If the laboratory does not comply with those requirements, it shall not submit results of the analysis of the sample for regulatory purposes.

(c) If the laboratory is accepting any regulatory sample within the scope of (a) above that has been collected, handled or preserved by a person other than the laboratory, the laboratory shall obtain reasonable assurance (including, but not limited to, a complete and properly signed chain-of-custody form) that the sample has been collected, preserved and handled in accordance with this subchapter. If the laboratory is unable to obtain this assurance for a sample, it shall not submit results of the analysis of the sample for regulatory purposes. The laboratory shall reject any such sample, and request a new sample. The laboratory shall verbally notify the client of this action within 24 hours after rejecting the sample, and provide the client with written confirmation of this action within five business days after rejecting the sample.

(d) Samples collected for conformance with the PWTA shall only be collected by an employee or an authorized representative of a certified laboratory, using procedures approved by the Department as indicated on the ACPL of a certified laboratory.

7:18-9.2 Requirements for microbiological parameter samples

(a) For regulatory samples that are to be analyzed for microbiological parameters to demonstrate compliance with the drinking water program:

1. The requirements of (c) below shall be satisfied;

2. Sample containers, preservation techniques, and holding times shall satisfy the requirements under N.J.A.C. 7:18-9.4(b)1 and Table 9.1; and

3. Collection, handling, analysis and preservation of drinking water samples for compliance with the statutes listed at N.J.A.C. 7:18-1.1(c)1 and 7 shall adhere to the sampling, identification, and transfer procedures described in the latest edition of Standard Methods approved by the USEPA. If there is any conflict between the collection, handling and preservation requirements in Standard Methods and the corresponding requirements in this subchapter, the requirements in Standard Methods shall control.

(b) For regulatory samples that are to be analyzed for microbiological parameters to demonstrate compliance with the water pollution program:

1. The requirements of (c) below shall be satisfied; and

2. Sample containers, preservation techniques, and holding times shall satisfy the requirements under N.J.A.C. 7:18-9.4(c) and Table 9.2.

(c) In addition to the requirements of Table 9.1 or 9.2, in N.J.A.C. 7:18-9.4, as applicable, the requirements listed in (c)1 through 13 below shall be satisfied for samples to be analyzed for one or more microbiological parameters. The requirements listed in (c)1 through 13 below are incorporated from the USEPA's "Microbiological Methods for Monitoring the Environment, Water and Wastes," EPA-600/8-78-017. If there are any conflicts between the USEPA publication and (c)1 through 13 below, the USEPA publication shall control.

1. The sample volume shall be at least 100 mL;

2. The sample container shall not be filled completely, to allow adequate air space for mixing;

3. The sample container shall have a capacity of at least 120 mL. The sample container shall be one of the following:

   i. A wide-mouthed hard glass and leakproof sample bottle;

   ii. A plastic sample bottle or container with a leakproof cap; or

   iii. A pre-sterilized plastic bag;

4. Glass-stoppered bottles shall be stored so that they are protected from contamination by dust and the glass stoppers shall be covered with either aluminum foil or kraft paper;

5. Caps shall have leakproof nontoxic liners that are capable of withstanding repeated sterilizations, at temperatures of 121 degrees Celsius sustained for 30 minutes per sterilization;

6. Sample containers shall have sodium thiosulfate (0.1 mL of 10% (weight/volume) solution per 120 mL capacity) added prior to sterilization;

7. When collecting samples known to contain heavy metals, add ethylenediamine-tetraacetic acid (EDTA) (0.3 mL of a 15 percent (weight/volume) solution per 120 mL capacity bottle) to the sample container prior to sterilization;

8. The collector shall complete a sample analysis request form immediately after collection. The collector shall state the following on the form:

   i. That sterilized containers with preservative were used for sampling;

   ii. The collector's name and affiliation;

   iii. Name and identification number of the environmental laboratory analyzing the sample;

iv. Sample location and type;

v. Date and time of collection;

vi. Chlorine residual results, if applicable;

vii. Preservatives or preservation conditions used;

viii. DSAMs to be performed; and

ix. Collector's signature and any remarks.

9. Unless the requirements of (c)13 below are satisfied, a chain-of-custody form shall be completed. The form shall provide space for the sample analysis request information listed in (c)8 above. The following chain-of-custody procedures shall be employed, and the following information shall be recorded by each person who collects or handles a regulatory sample:

i. Use tie-on or affixed labels with sample identification to label the sample; and

ii. After the sample has been collected, the collector shall write the following information on the chain-of-custody form:

(1) The information required under (c)8i through viii above;

(2) Signature, date and time of chain-of-custody transfers; and

(3) Number of containers.

10. When sending samples by mail or private shipping service, the collector shall complete the chain-of-custody form before shipping, and place it into the shipping container. The container shall have a numbered custody seal;

11. Samples shall be stored in iced coolers at four degrees Celsius during transit to the certified environmental laboratory and refrigerated upon delivery until such analyses can be performed;

12. A certified environmental laboratory shall not accept a sample unless it is properly labeled, and for which assurance is given that the sample has been collected, preserved, processed, stored and transported in a manner that will assure the identity of the sample and that the sample is sufficiently stable to be used in the requested tests or analyses; and

13. A formal chain-of-custody procedure is not required if:

i. The collector and the analyst are the same person; and

ii. The collector enters in the field log book all of the information required under (c)8 above.

7:18-9.3 Requirements for inorganic, organic, and radiochemical parameter samples

(a) Regulatory samples to be analyzed for one or more inorganic, organic or radiochemical parameters shall be handled and preserved as follows:

1. Drinking water program samples to be analyzed for one or more inorganic or organic parameters shall be handled and preserved in accordance with the applicable requirements of Table 9.1 in N.J.A.C. 7:18-9.4(b);

2. Wastewater program samples to be analyzed for one or more chemical parameters shall be handled and preserved in accordance with the applicable requirements in Table 9.2 in N.J.A.C. 7:18-9.4(c);

3. Solid/hazardous waste program samples (aqueous non-potable matrices) to be analyzed for one or more chemical parameters shall be handled and preserved in accordance with the applicable requirements in Table 9.2 in N.J.A.C. 7:18-9.4(c);

4. Drinking water program samples to be analyzed for one or more radiochemical parameters shall be handled and preserved in accordance with the applicable requirements of Table 9.3 in N.J.A.C. 7:18 9.4(d);

5. Wastewater program samples to be analyzed for one or more radiochemical parameters shall be handled and preserved in accordance with the applicable requirements in Table 9.4 in N.J.A.C. 7:18 9.4(e);

6. Solid/hazardous waste program samples in the form of soils, liquids, sediments, and sludges shall be handled and preserved in accordance with the applicable requirements in Table 9.5 in N.J.A.C. 7:18-9.4(f);

7. CERCLA-CLP aqueous and non-aqueous samples shall be handled and preserved in accordance with the applicable requirements in Table 9.6 in N.J.A.C. 7:18-9.4(g); and

8. Air program samples to be analyzed for one or more chemical parameters shall be handled and preserved in accordance with the applicable requirements in Table 9.7 in N.J.A.C. 7:18-9.4(h).

(b) In addition to the requirements of Tables 9.1 through 9.6, in N.J.A.C. 7:18-9.4, as applicable, the following requirements apply to the handling and preservation of regulatory samples to be analyzed for one or more chemical parameters. Pre-preserved bottles may be used, but the pH of regulatory samples must be checked and adjusted as outlined below if the pH is not 2 before shipped to the laboratory. If proper preservation is not obtained, follow the procedure as outlined in this subsection.

1. To preserve a sample (other than a sample to be analyzed for volatile organics) by pH adjustment:

   i. Add an acid or base preservative to the sample. Do not add preservative in an amount that will dilute the sample and give inaccurate results;

   ii. Replace the stopper or closure on the sample bottle and mix the sample thoroughly by inverting the bottle several times;

   iii. Remove the sample bottle stopper or closure and place a drop of the sample from the stopper onto pH test paper;

   iv. Rinse the portion of the stopper exposed to the pH paper with Type II water;

v. If the proper pH has not been obtained, repeat steps (b)1i through iv above; and

vi. Transport samples requiring cooling at four degrees Celsius in an ice chest, shuttle, or cooler containing crushed ice or other suitable coolant capable of reducing the ice chest temperature to four degrees Celsius and maintaining this temperature during transport.

2. To use pH adjustment to preserve a sample that is to be analyzed for volatile organics:

i. Collect the sample in a 40 mL or larger glass Teflon-lined septum vials;

ii. Add a dechlorination agent if residual chlorine is present;

iii. Prior to filling sample vials, determine the appropriate amount of 1:1 HCl necessary to lower the sample pH to 2 by filling a separate representative vial with the sample. Record the amount of acid needed to reach a pH of about 2. Add this amount of 1:1 HCl to each successive 40 mL or larger vial collected;

iv. Add 1:1 hydrochloric acid (HCl) at time of collection;

v. Fill the vial with sample to the point of overflowing (zero head space), place the screw cap containing a Teflon faced silicon septum on the vial, and secure it tightly;

vi. Position the silicone septum in the cap so that the Teflon side will lie face down on the water sample;

vii. Inspect the vial for any air bubbles. If bubbles are present, remove the cap and add more sample to the vial, replace the cap, and inspect the vial for bubbles again. Repeat until no bubbles are present;

viii. If effervescence occurs when the HCl is added, omit acid preservation of sample. If acid preservation is prohibited by effervescence, the sample must be analyzed within 7 days of collection; and

ix. Maintain the sample at four degrees Celsius in an ice chest or shuttle containing ice or other suitable coolant capable of reducing the ice chest or shuttle to four degrees Celsius.

3. A sample analysis request form stating the following information shall be completed immediately after collection:

i. The collector's name and affiliation;

ii. The name and identification number of the laboratory analyzing the sample;

iii. The sample location and type;

iv. The date and time of collection;

v. The chlorine residual results, if applicable;

vi. The preservatives or preservation conditions used;

vii. DSAMs to be performed; and

viii. The collector's signature and any remarks.

4. Unless the requirements of (b)6 below are satisfied, a chain-of-custody form shall be completed. The form shall provide space for the information listed in (b)3 above. The following chain-of-custody procedures shall be employed, and the following information recorded, in collecting and handling regulatory samples:

i. Document that the proper decontaminated containers are used for sampling;

ii. Use tie-on or affixed labels with an identification number to identify all samples; and

iii. After the sample has been collected, the collector shall write the following information on the chain-of-custody form:

(1) The collector's name and affiliation;

(2) The name and identification number of the laboratory analyzing the sample;

(3) The sample location and type;

(4) The date and time of collection;

(5) The signature, date and time of chain-of-custody transfers;

(6) The number of containers;

(7) The chlorine residual results, if applicable;

(8) The preservatives or preservation conditions used; and

(9) DSAMs to be performed.

5. When sending samples by mail or by private shipping, the collector shall complete the chain-of-custody form before shipping, and place it into the shipping container. The container shall have a numbered custody seal.

6. A formal chain-of-custody procedure is not needed in the following circumstances:

i. The collector and the analyst are the same person; and

ii. All of the information required under (b)3 above is entered in the field log book.

7:18-9.4 Requirements for sample handling and preservation for specific parameters

(a) A laboratory shall handle and preserve samples in accordance with the following requirements:

1. All sample bottles for aqueous samples shall be precleaned before arriving on site.

2. All sample bottles used for taking grab samples, except for prepreserved bottles, shall be rinsed with sample water at least twice before being filled, unless the sample is to be analyzed for any of the following:

   i. Petroleum hydrocarbons;

   ii. Oil and grease;

   iii. Pesticides;

   iv. PCB, PBB and herbicides;

   v. Bacteriological;

   vi. Dissolved oxygen;

   vii. Volatile organics; or

   viii. Metals.

3. After rinsing, the sample bottle shall be filled with the sample using a minimum of agitation.

4. Fill the sample bottle completely if the sample is to be analyzed for purgeable organics, oxygen demand, hydrogen sulfide, hardness, ferrous iron, acidity, or alkalinity.

5. For samples to be analyzed for parameters other than those listed in 4 above, leave at least one inch of air space at the top of the sample bottle.

6. If a sample is to be analyzed for bacteriological parameters, collect it directly in a presterilized sample container.

7. If a sample is to be analyzed for oil and grease or for petroleum hydrocarbons, the following procedure shall be followed:

   i. Collect the sample directly into the sample bottle;

   ii. Use a one-liter glass bottle fitted with a Teflon®-lined screw cap or ground glass stopper;

   iii. Leave a one-inch air space inside the sample bottle. Do not overflow the sample bottle allowing the oil and grease phase to flow out of the bottle;

   iv. Do not transfer the sample into another bottle for analysis;

v. Use all of the sample, rather than an aliquot portion of the sample, for analysis.

vi. Before taking the sample from a closed conduit via a valve or faucet arrangement, allow enough water to flush through the valve or faucet prior to filling the bottle in order to obtain a representative sample;

vii. Representative grab samples taken from an open channel must be obtained at one of the following locations:

(1) Where the Froude number equals or exceeds 1 at the time of sampling and at least 90 percent of the time when a discharge exists. The Froude number is computed according to the following formula:

$$Fr=\frac{V}{\sqrt{gy}}$$

Where:

Fr= Froude number (dimensionless);

V = mean velocity of the fluid in the channel, in feet per second;

g = the acceleration of gravity (32.2 ft/sec^2); and

y = Vertical depth of flow, in feet;

(2) Immediately downstream of a hydraulic jump; or

(3) From a sampling point located immediately after a V-notch weir, properly installed as a flow measuring device.

viii. Representative grab samples taken from a closed conduit must be obtained at a point where the Reynolds number exceeds 4,000 at the time of sampling and at least 90 percent of the time when a discharge exists. The Reynolds number is computed according to the following formula:

$$R=\frac{Vd}{v}$$

Where:

R = Reynolds number (dimensionless);

V = mean velocity of the fluid in the pipe, in feet per second;

d = diameter of the pipe, in feet; and

v= kinematic viscosity, in feet^2 per second, using the applicable value for v listed below based on the temperature of the discharge.

Temperature	v
32°F	1.931 $ft^2/sec \times 10^{-5}$
40°F	1.664 $ft^2/sec \times 10^{-5}$
50°F	1.410 $ft^2/sec \times 10^{-5}$
60°F	1.217 $ft^2/sec \times 10^{-5}$
70°F	1.059 $ft^2/sec \times 10^{-5}$
80°F	0.930 $ft^2/sec \times 10^{-5}$
90°F	0.826 $ft^2/sec \times 10^{-5}$
100°F	0.739 $ft^2/sec \times 10^{-5}$
110°F	0.667 $ft^2/sec \times 10^{-5}$
120°F	0.609 $ft^2/sec \times 10^{-5}$

ix. The discharger shall document the sampling methodology, and shall make the documentation available to the Department.

x. Samples to be analyzed for oil and grease or petroleum hydrocarbons may be collected pursuant to an alternate sampling protocol approved in writing by the Department. The Department shall not approve an alternate sampling protocol unless it determines that the alternate protocol will result in the collection of representative samples.

8. Samples to be analyzed for pesticides, herbicides or PCBs shall be collected in bottles at least one liter in size, which have been cleaned to remove all traces of these compounds and then rinsed with pesticide grade solvents before drying.

(b) Drinking water samples shall be handled and preserved in accordance with the requirements of Table 9.1 and the requirements of (b)1 through 12 below. Table 9.1 includes applicable requirements from 40 CFR 141.23, 141.24 and 143.4, and from the USEPA's September 1992 "Labcert Bulletin," EPA-814-k-92-002. If there is any conflict between Table 9.1 and the USEPA rule or publication (including any amendments or supplements) on which any part of Table 9.1 is based, the USEPA rule or publication shall control.

1. Table 9.1 requires the use of concentrated nitric acid (HNO_3) for the preservation of samples to be analyzed for copper or lead. If HNO_3 cannot be used because of shipping restrictions, the sample shall be shipped to the laboratory immediately, at ambient temperature. Upon receipt, the sample shall be acidified with Conc. HNO_3 to pH < 2 and held for at least 16 hours before analysis.

2. The laboratory shall analyze each sample as soon after collection as possible. The laboratory shall not analyze a sample after the maximum holding time listed in Table 9.1 has elapsed since collection.

3. Samples to be analyzed for asbestos, fecal coliform, total coliform, fecal streptococci, total cyanide, cyanide amenable to chlorination, acenaphthene, acrolein, acrylonitrile, anthracene, benzene, benzidine, benzo(a)anthracene or benzo(a)pyrene) shall never be frozen.

4. For samples to be analyzed for chlorinated hydrocarbons, chlorophenoxys, cyanide, purgeable organic compounds, volatile aromatic and unsaturated organic compounds, volatile halogenated organic compounds, ascorbic acid may be used only in the presence of residual chlorine.

5. When Table 9.1 lists the maximum holding time as "Analyze-Immediately," the laboratory shall analyze the sample within 15 minutes after collection.

6. Sampling location for conformance with the PWTA shall be determined as follows:

   i. If there is no water treatment system in use on the subject property, samples shall be collected from a primary cold water, non-aerated spigot or tap, that draws from, or feeds water to the potable water system for the subject property.

   ii. Where a water treatment system is in use on the subject property, the water treatment system shall be disconnected or otherwise disabled prior to the collection of the water sample, or the sample shall be collected at a location prior to the water treatment system.

   iii. In the case of new well construction where there is no spigot or tap on the subject property, the sample may be collected directly at the well head, as set forth at N.J.A.C. 7:10-12.30.

7. PWTA samples shall be collected in accordance with the following requirements.

   i. Collection, handling, and preservation of samples to be analyzed under the PWTA shall adhere to the sampling, identification, and transfer procedures described in the latest edition of Standard Methods approved by the USEPA. If there is any conflict between the collection, handling and preservation requirements in Standard Methods and the corresponding requirements in this subchapter, the requirements in Standard Methods shall control.

   ii. Samples taken from any tap or spigot shall be collected by maintaining a steady water flow for at least two minutes (until the water changes temperature). Water taps used for sampling are to be free of aerators, strainers, hose attachments, mixing type faucets, and purification devices.

   iii. Where the purposes of testing is to determine whether the source of a contaminant is the water source or the plumbing, a first draw sample shall be collected from an area of the plumbing where the water has been motionless for at least six hours. These results shall be compared to the result of the analysis of a sample collected in accordance with (b)7ii above.

8. The laboratory shall not report results of analysis to the Department or to any other person unless the original or true duplicate of the results is sent to the client. The report shall be signed by the laboratory manager or designee identified under N.J.A.C. 7:18-2.11(a)1iii.

9. The laboratory shall include the following information in reporting results to the client;

i. The information specified at N.J.A.C. 7:18-4.6(h), 5.6(j), 6.6(f), and 8.5(e) as applicable;

ii. The name and mailing address of the person or persons making the request for the test;

iii. The name of the employee or authorized representative of the laboratory who collected the well sample and their certification ID number if applicable;

iv. The location of the real property, described by block and lot number, street address, municipality, and county;

v. The specific point of collection along with a description of the treatment unit if applicable;

vi. The date and time the sample was analyzed by the laboratory;

vii. The MCLs, applicable water quality standard, or action level for each parameter as set forth at N.J.A.C. 7:10-5.1, 5.2 and 7.2

viii. The date that the results will be submitted to the Department and the method by which the results will be transmitted.

ix. A statement that the testing is for the purpose of complying with the PWTA and N.J.A.C. 7:9E;

x. Information, as provided by the Department, regarding remediation funding alternatives available and the location additional information may be obtained; and

xi. Any other information required by N.J.A.C. 7:9E for the submittal of information under the PWTA.

10. The laboratory shall include the following information when reporting the results to the Department:

i. The information required in (b)9 above;

ii. The initial and recounted gross alpha value determined in accordance with N.J.A.C. 7:18-6.4(a)3; and

iii. Any other information required by N.J.A.C. 7:9E for the submittal of information under the PWTA.

11. Results shall be transmitted to the Department within five business days after completion of the water tests as described in N.J.A.C. 7:9E.

12. When required by N.J.A.C. 7:9E, the laboratory shall electronically submit the information specified in (b)10 above.

i. Where data submitted for the PWTA is rejected by the Department because of a failure to submit all information required above, the laboratory shall resubmit a complete set of data to the Department and to the person(s) who requested the test, within two (2) business days of receipt of notification.

TABLE 9.1 REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES FOR DRINKING WATER SAMPLES, EXCEPT RADIOCHEMICAL PARAMETERS

Parameter	**Preservation**	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft.)	**Maximum Holding Time**
Total Coliform	Cool 4°C, 0.008% sodium thiosulfate ($Na_2S_2O_3$)	P or G	30 hours
Alkalinity	Cool 4°C	P or G	14 days
Antimony	Conc HNO_3 to pH <2	P or G	6 months
Arsenic	Conc HNO_3 to pH <2	P or G	6 months
Asbestos	Cool 4°C	P or G	Filter within 48 hours
Barium	Conc HNO_3 to pH < 2	P or G	6 months
Beryllium	Conc HNO_3 to pH < 2	P or G	6 months
Cadmium	Conc HNO_3 to pH < 2	P or G	6 months
Calcium	Conc HNO_3 to pH < 2	P or G	6 months
Chloride	None	P or G	28 days
Chlorinated Hydrocarbons	Refrigerate at 4°C after collection, Ascorbic acid	Glass with foil or Teflon®-lined cap	14 days until extraction; 40 days after extraction
Chlorinated Pesticides	80mg/L $Na_2S_2O_3$ (if residual chlorine (Cl_2) is present) Cool 4°C	Glass with Teflon®-lined septum	7 days until extraction; 14 days after extraction
Chlorinated phenoxy Acids	80mg/L $Na_2S_2O_3$ (if residual Cl_2) Cool 4°C	Glass with Teflon®-lined septum	14 days until extraction; 28 days after extraction
Chlorine dioxide	None	P or G	Analyze Immediately
Chlorinated Acids	Refrigerate at 4°C after collection, Ascorbic acid	Glass with foil-or Teflon® lined cap	7 days until extraction; 30 days after extraction
Chromium	Conc HNO_3 to pH < 2	P or G	6 months
Copper	Conc HNO_3 to pH < 2	P or G	6 months

Parameter	**Preservation**	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft.)	**Maximum Holding Time**
Cyanide	NaOH to pH > 12, Cool 4°C, 0.6 g ascorbic acid	P or G	14 days
EDB/DBCP	Cool 4°C 0.08% $Na_2S_2O_3$ (if residual Cl_2) 1:1 HCl to pH < 2	Glass with Teflon®-lined septum	28 days
Fluoride	None	P	28 days
Free Chlorine Residual	None	P or G	Analyze Immediately
Lead	Conc HNO_3 to pH < 2	P or G	6 months
Mercury	Conc HNO_3 to pH < 2	P or G	28 days
N-Methyl-Carbamoyloximes N-Methyl-Carbamates	Monochloroacetic acid to pH 3, 80mg/L $Na_2S_2O_3$, Cool 4°C until storage, Store at -10°C	Glass with Teflon® lined septum	28 days at –10°C
Nickel	Conc HNO_3 to pH < 2	P or G	6 months
Nitrate Chlorinated	Cool 4°C	P or G	28 days
Nitrate Non-chlorinated	Conc H_2SO_4 to pH < 2	P or G	14 days
Nitrite	Cool 4°C	P or G	48 hours
Nitrogen- and Phosphorus-Containing Pesticides	80mg/L $Na_2S_2O_3$ (if residual Cl_2) Cool 4°C	Glass (dark) with Teflon® lined septum	14 days until extraction; 14 days after extraction
o-Phosphate	Filter immediately, Cool 4°C	P or G	48 hours
Organic Compounds	If residual Cl_2 40-50 mg sodium arsenite or sodium thiosulfate; if unchlorinated 6 N HCl to pH < 2	Glass with Teflon® lined septum	7 days until extraction; 30 days after extraction
Organohalide Pesticides and Commercial PCB Products (Arochlors)	3mg $Na_2S_2O_3$ or 7µL $Na_2S_2O_3$ (0.04g/mL), Cool 4°C until analyzed	Glass with Teflon®-lined septum	If Heptachlor, 7 days until extraction; 40 days after extraction If no extraction analysis 14 days
Ozone	None	G	Analyze Immediately

Parameter	**Preservation**	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft.)	**Maximum Holding Time**
pH	None	P or G	Analyze Immediately
Selenium	Conc HNO_3 to pH < 2	P or G	6 months
Silver	Conc HNO_3 to pH < 2	P or G	6 months
Sodium	Conc HNO_3 to pH < 2	P or G	6 months
Sulfate	Cool 4°C	P or G	28 days
Temperature	None	P or G	Analyze Immediately
Thallium	Conc HNO_3 to pH < 2	P or G	6 months
TTHMs	$Na_2S_2O_3$ if residual Cl_2 and 6N HCl	Glass with Teflon®-lined septum	14 days
Total Dissolved Solids	Cool 4°C	P or G	7 days
Turbidity	Cool 4°C	P or G	48 hours
Volatile Aromatic and Unsaturated Organic Compounds	1:1 HCl to pH < 2 Cool, 4°C until analysis, Ascorbic acid	Glass with Teflon®-lined septum	14 days
Volatile Halogenated Organic Compounds	1:1 HCl to pH < 2 Cool, 4°C until analysis, Ascorbic acid	Glass with Teflon®-lined septum	14 days
Volatile Organic Compounds	1:1 HCl to pH < 2 Cool, 4°C until analysis, Ascorbic acid	Glass with Teflon®-lined septum	14 days

(c) Non-potable water samples and solid/hazardous waste program samples (aqueous non-potable matrices) shall be handled and preserved in accordance with the requirements of Table 9.2 and the requirements of (c)1 through 3 below. Table 9.2 includes applicable requirements from 40 CFR 136.3 and the USEPA's Test Methods for Evaluating Solid Waste – Physical and Chemical Methods, Third Edition 1986, as updated (referred to below as "SW-846"). If there is any conflict between Table 9.2 and the USEPA rule or publication (including any amendments or supplements) on which any part of Table 9.2 is based, the USEPA rule or publication shall control.

1. The laboratory shall perform sample preservation immediately after collecting each sample. For composite chemical samples, each aliquot shall be preserved at the time of collection, unless the use of an automated sampler makes it impossible to preserve each aliquot. In that case, chemical samples may be preserved by maintaining at four degrees Celsius until compositing and sample splitting is completed.

2. Shipping of any sample by common carrier or through the United States Mail shall be in accordance with the United States Department of Transportation's

hazardous materials regulations at 49 CFR Part 172 (as such regulations are amended and supplemented). These regulations do not apply to the following materials required to be used for sample preservation: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight (pH of about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight (pH of about 1.15 or greater); and Sodium Hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight (pH of about 12.30 or less).

3. The laboratory shall analyze each sample as soon after collection as possible. Except as provided in (c)3i or ii below, the laboratory shall not analyze a sample after the maximum holding time listed in Table 9.2 has elapsed since collection.

   i. If the laboratory has reason to believe that a sample will not be stable for the applicable maximum holding time, it shall analyze the sample within a shorter time during which the sample will remain stable;

   ii. If the laboratory or the permittee has received a variance from the USEPA Regional Administrator authorizing a holding time that is longer than the applicable maximum in Table 9.2, and the laboratory or the permittee has data on file showing that the type of sample in question is stable for such a longer time, the laboratory shall analyze the sample within such longer time; or

   iii. If SW-846 or the USEPA rules at 40 CFR 136.3 specifies a maximum holding time that differs from the time specified in Table 9.2, the laboratory shall not analyze a sample after the maximum holding time specified in SW-846 or 40 CFR 136.3, as applicable.

TABLE 9.2 REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES FOR NON-POTABLE WATER SAMPLES AND SOLID/HAZARDOUS WASTE PROGRAM SAMPLES (AQUEOUS NON-POTABLE WATER MATRICES), EXCEPT RADIOCHEMICAL PARAMETERS

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Bacterial Tests:			
Coliform (fecal)	P, G	Cool 4°C, 0.008% $Na_2S_2O_3$	6 hours
Coliform (total)	P, G	Cool 4°C, 0.008% $Na_2S_2O_3$	6 hours
Fecal streptococci	P, G	Cool 4°C, 0.008% $Na_2S_2O_3$	6 hours
Inorganic Tests:			
Acidity, as $CaCO_3$	P, G	Cool 4°C	14 days
Alkalinity as $CaCO_3$	P, G	Cool 4°C	14 days

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Aluminum-total[3]	Rinse three times with laboratory pure water; and P, G	HNO_3 to pH < 2	6 months
Ammonia (as N)	P, G	Cool 4°C H_2SO_4 to pH < 2	28 days
Antimony-total[3]	P, G	HNO_3 to pH < 2	6 months
Arsenic-total[3]	P, G	HNO_3 to pH < 2	6 months
Barium-total[3]	P, G	HNO_3 to pH < 2	6 months
Beryllium-total[3]	P, G	HNO_3 to pH < 2	6 months
Biochemical Oxygen Demand	P, G	Cool 4°C	48 hours
Boron-total[3]	P, G	HNO_3 to pH < 2	6 months
Bromide[3]	P, G	None required	28 days
Cadmium-total[3]	P, G	HNO_3 to pH < 2	6 months
Calcium-total[3]	P, G	HNO_3 to pH < 2	6 months
Carbonaceous Biochemical Oxygen Demand	P, G	Cool 4°C	48 hours
Chemical Oxygen Demand (COD)	P, G	Cool 4°C H_2SO_4 to pH < 2	28 days
Chloride	P, G	None required	28 days
Chlorine total residual (TRC)	P, G	None required	Analyze Immediately
Chromium VI (dissolved)	P, G	Cool 4°C	24 hours
Chromium-total[3]	P, G	HNO_3 to pH < 2	6 months
Cobalt-total[3]	P, G	HNO_3 to pH < 2	6 months
Color	P, G	Cool 4°C	48 hours
Copper-total[3]	P, G	HNO_3 to pH < 2	6 months
Cyanide-total[3]	P, G	Cool 4°C, NaOH to pH > 12 0.6g ascorbic acid	14 days (24 hours when sulfide is present)[2]
Cyanide amenable to chlorination[3]	P, G	Cool 4°C, NaOH to pH > 12 0.6g ascorbic acid	14 days (24 hours when sulfide is present)[2]

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Fluoride	P	None required	28 days
Gold-total[3]	P, G	HNO_3 to pH < 2	6 months
Hardness-total as $CaCO_3$	P, G	HNO_3 to pH < 2, H_2SO_4 to pH < 2	6 months
Hydrogen ion (pH)	P, G	None required	Analyze Immediately
Iridium-total[3]	P, G	HNO_3 to pH < 2	6 months
Iron-total[3]	P, G	HNO_3 to pH < 2	6 months
Kjeldahl & Organic Nitrogen	P, G	Cool 4°C, H_2SO_4 to pH < 2	28 days
Lead-total[3]	P, G	HNO_3 to pH < 2	6 months
Magnesium-total[3]	P, G	HNO_3 to pH < 2	6 months
Manganese-total[3]	P, G	HNO_3 to pH < 2	6 months
Mercury-total[3]	P, G	HNO_3 to pH < 2	28 days
Molybdenum-total[3]	P, G	HNO_3 to pH < 2	6 months
Nickel-total[3]	P, G	HNO_3 to pH < 2	6 months
Nitrate (as N)	P, G	Cool 4°C	48 hours
Nitrate-Nitrite(as N)	P, G	Cool 4°C, H_2SO_4 to pH < 2	28 days
Nitrite (as N)	P, G	Cool 4°C	48 hours
Oil and grease	G	Cool 4°C, HCl or H_2SO_4 to pH < 2	28 days
Organic carbon-total (TOC)	P, G	Cool 4°C, HCl or H_2SO_4 to pH < 2 or phosphoric acid	28 days
Orthophosphate (as P)	P, G	Filter Immediately, Cool 4°C	48 hours
Osmium-total[3]	P, G	HNO_3 to pH < 2	6 months
Oxygen dissolved (probe)	Glass bottle and top	None Required	Analyze Immediately
Oxygen dissolved (Winkler)	Glass bottle and top	Fix on site and store in dark	8 hours

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Palladium-total[3]	P, G	HNO_3 to pH < 2	6 months
Petroleum Hydrocarbons	G	HCl to pH 2	7 days
Phenols	G only	Cool 4°C, H_2SO_4 to pH < 2	28 days
Phosphorus (elemental)	G	Cool 4°C,	48 hours
Phosphorus-total	P, G	Cool 4°C, H_2SO_4 to pH < 2	28 days
Platinum-total[3]	P, G	HNO_3 to pH < 2	6 months
Potassium-total[3]	P, G	HNO_3 to pH < 2	6 months
Residue-total	P, G	Cool 4°C	7 days
Residue-filterable (TDS)	P, G	Cool 4°C	7 days
Residue-nonfilterable (TSS)	P, G	Cool 4°C	7 days
Residue-settleable	P, G	Cool 4°C	48 hours
Residue-volatile	P, G	Cool 4°C	7 days
Rhodium-total[3]	P, G	HNO_3 to pH < 2	6 months
Ruthenium-total[3]	P, G	HNO_3 to pH < 2	6 months
Salinity	G	Cool 4°C	28 days
Selenium-total[3]	P, G	HNO_3 to pH < 2	6 months
Silica-dissolved	P	Cool 4°C	28 days
Silver-total[3]	P, G	HNO_3 to pH < 2	6 months
Sodium-total[3]	P, G	HNO_3 to pH < 2	6 months
Specific conductance	P, G	Cool 4°C	28 days
Sulfate	P, G	Cool 4°C	28 days
Sulfide	P, G	Cool 4°C; Add zinc acetate & NaOH to pH > 9	7 days
Sulfite	P, G	None required	Analyze Immediately
Surfactants	P, G	Cool 4°C	48 hours
Temperature	P, G	None required	Analyze Immediately

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Thallium-total[3]	P, G	HNO_3 to pH < 2	6 months
Tin-total[3]	P, G	HNO_3 to pH < 2	6 months
Titanium-total[3]	P, G	HNO_3 to pH < 2	6 months
Turbidity	P, G	Cool 4°C	48 hours
Vanadium-total[3]	P, G	HNO_3 to pH < 2	6 months
Zinc-total[3]	P, G	HNO_3 to pH < 2	6 months
Organic Tests[4]			
Acenaphthene[7]	Glass, Teflon®-lined cap	Cool 4° C, 0.008% $Na_2S_2O_3$ Store in dark	7 days until extraction; 40 days after extraction
Acenaphthylene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$ Store in dark	7 days until extraction; 40 days after extraction
Acrolein	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$ Adjust pH to 4-5[6]	14 days
Acrylonitrile	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$ Adjust pH to 4-5[6]	14 days[6]
Anthracene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$	7 days until extraction; 40 days after extraction
Benzene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$ HCl to pH 2	14 days
Benzidine[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$	7 days until extraction[8]
Benzo(a) anthracene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$ Store in dark	7 days until extraction; 40 days after extraction
Benzo(a)pyrene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Benzo(b) fluoranthene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Benzo(g,h,i) perylene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Benzo(k) fluoranthene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Benzyl chloride	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	14 days
Benzyl butyl phthalate[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
Bis(2-chloroethoxy) methane[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
Bis(2-chloroethyl) ether[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
Bis(2-ethylhexyl) phthalate[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
Bromodichloromethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Bromomethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Bromoform	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
4-Bromophenylphenyl ether[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
Carbon tetrachloride	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
4-Chloro-3-methylphenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Chlorobenzene	Glass, Teflon®- lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Chloroethane	Glass, Teflon®- lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
2-Chloroethylvinyl ether	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Chloroform	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Chloromethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
2-Chloronaphthalene[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
2-Chlorophenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
4-Chlorophenylphenyl ether[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
Chrysene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Dibenzo(a,h)anthracene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Dibromochloromethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
1,2-Dichloro-benzene[7]	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
1,3-Dichloro-benzene[7]	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
1,4-Dichloro-benzene[7]	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
3,3'-Dichlorobenzidine[7]	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	14 days
Dichlorodifluoromethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	14 days
1,1-Dichloroethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
1,2-Dichloroethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
1,1-Dichloroethene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
trans-1,2-Dichloroethene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
2,4-Dichlorophenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
1,2-Dichloropropane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
cis-1,3-Dichloropropene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
trans-1,3-Dichloropropene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Diethyl phthalate[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
2,4-Dimethylphenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
Dimethyl phthalate	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Di-n-butyl phthalate[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
Di-n-octyl phthalate[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
2,3-Dinitrophenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
2,4-Dinitrotoluene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
2,6-Dinitrotoluene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Epichlorohydrin	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	14 days
Ethylbenzene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Fluoranthene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Fluorene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Hexachlorobenzene[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
Hexachlorobutadiene[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
Hexachlorocyclopentadiene[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
Hexachloroethane[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Ideno(l,2,3-cd)pyrene[7]	Glass, Teflon®-lined cap	Cool 4°C 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Isophorone[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Methylene chloride	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
2-Methyl-4,6-dinitro phenol[7]	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
Naphthalene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Nitrobenzene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
2-Nitrophenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
4-Nitrophenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
N-Nitrosodimethylamine[7, 10]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
N-Nitrosodi-n-propylamine[7,10]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
N-Nitrosodiphenylamine[7, 10]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
2,2'-Oxybis(1-chloropropane)	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
PCB-1016[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
PCB-1221[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
PCB-1232[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
PCB-1242[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
PCB-1248[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
PCB-1254[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
PCB-1260[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
Pentachlorophenol	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
Phenol[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
Pyrene[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1] Store in dark	7 days until extraction; 40 days after extraction
2,3,7,8-Tetra-chlorodibenzo-p-dioxin[7]	Glass, Teflon®-lined cap	Cool 4°C, 0.008% $Na_2S_2O_3$[1]	7 days until extraction; 40 days after extraction
1,1,2,2-Tetrachloroethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Tetrachloroethene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Toluene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
1,2,4-Trichlorobenzene[7]	Glass, Teflon®-lined cap	Cool 4°C	7 days until extraction; 40 days after extraction
1,1,1-Trichloroethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
1,1,2-Trichloroethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Trichloroethene	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Trichlorofluoromethane	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2[5]	14 days
Vinyl chloride	Glass, Teflon®-lined septum	Cool 4°C, 0.008% $Na_2S_2O_3$[1] HCl to pH 2	14 days[5]
Pesticides Tests:[7]			
Aldrin	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Ametryn	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction;40 days after extraction
Aminocarb	Glass, Teflon®-lined cap	Cool 4°C pH 5-9[10]	7 days until extraction; 40 days after extraction
Atraton	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Atrazine	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Azinphos methyl	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Barban	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
alpha-BHC	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
beta-BHC	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
gamma-BHC (Lindane)	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Captan	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Carbaryl	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Carbophenothion	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Chlordane	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Chloropropham	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
2,4-D	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
4,4'-DDD	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
4,4'-DDE	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Demeton-O	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Dementon-S	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Diazinon	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Dicamba	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Dichlofenthion	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Dichloran	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Dicofol	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Disulfoton	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Dioxathion	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Endosulfan I	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Endosulfan II	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Endosulfan Sulfate	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Endrin	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Endrin aldehyde	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Ethion	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Fenuron	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Fenuron-TCA	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Heptachlor	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Heptachlor epoxide	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Linuron	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Malathion	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Methiocarb	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Methoxychlor	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Mexacarbate	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Mirex	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Monuron	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Monuron-TCA	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Nuburon	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
Parathion methyl	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
PCNB	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Perthane	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Prometron	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Prometryn	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Propazine	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Propham	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Propoxur	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Secbumeton	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Siduron	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Simazine	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Strobane	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Swep	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction

Parameter	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft)	**Preservation**	**Maximum Holding Time**
2,4,5-T	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
2,4,5-TP (Silvex)	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Terbuthylazine	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Toxaphene	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction
Trifluralin	Glass, Teflon®-lined cap	Cool 4°C, pH 5-9[10]	7 days until extraction; 40 days after extraction

REFERENCES FOR TABLE 9.2 NON-POTABLE WATER SAMPLES AND SOLID/HAZARDOUS WASTE PROGRAM SAMPLES (AQUEOUS NON-POTABLE WATER MATRICES)

[1] Use only in the presence of residual chlorine.

[2] Optionally, all samples may be tested with lead acetate paper before pH adjustment in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then the NaOH is added to pH 12.

[3] Filter samples immediately on-site before adding preservatives for dissolved metals.

[4] Applies to samples to be analyzed by GC, LC, or GC/MS for specific compounds.

[5] Sample receiving no pH adjustment shall be analyzed within seven days of sampling.

[6] The pH adjustment is not required if acrolein will not be measured. Samples for acrolein receiving no pH adjustment shall be analyzed within three days of sampling.

[7] When the extractable analytes of concern fall within a single chemical Category, the specified preservative and maximum holding times shall be observed for optimum safe guard of sample integrity. When the analyses of concern fall within two or more chemical Categories, the sample may be preserved by cooling to four degrees Celsius, reducing residual chlorine with 0.008% $Na_2S_2O_3$, storing in the dark and for pesticides only adjusting the pH to 6-9; samples preserved in this manner may be held for seven days before extraction and 40 days after extraction. Exceptions to this optional preservation and holding time procedure are noted in reference 1 (regarding the requirement for thiosulfate reduction of residual chlorine), and references 8 and 9 (re the analysis of benzidine).

[8] Extracts may be stored up to seven days before analysis if storage is conducted under an inert (oxidant-free) atmosphere.

[9] For the analysis of diphenylnitrosamine, add 0.008% $Na_2S_2O_3$ and adjust pH to 7-10 with NaOH within 24 hours of sampling.

[10] The pH adjustment may be performed upon receipt at the environmental laboratory and may be omitted if the samples are extracted within 72 hours of collection. For the analysis of aldrin, add 0.008% $Na_2S_2O_3$.

(d) Drinking water samples that are to be subject to radiochemical measurements shall be handled and preserved in accordance with the requirements of Table 9.3 and the requirements of 1 below. Table 9.3 includes requirements from the USEPA's Manual for the Certification of Laboratories Analyzing Drinking Water, USEPA-814B-92-002. If there is any conflict between Table 9.3 and the USEPA publication (including any amendments or supplements) on which any part of Table 9.3 is based, the USEPA rule or publication shall control. The laboratory shall make radiochemical measurements using the instrumentation required under Table 9.3. In the list of required instrumentation in Table 9.3, "A" means a low background proportional system; "B" means an alpha scintillation system; "C" means a gamma spectrometer (NaI(Tl) or Ge (Li)); "D" means a scintillation cell (radon) system; "E" means a liquid scintillation system; and "F" means a fluorometer.

1. Except as provided in (d)i or ii below, the sample shall be acidified at the time of collection, in accordance with the requirements listed under "Preservation" in Table 9.3. A minimum of 16 hours shall elapse between acidification and analysis.

   i. If suspended solids activity is to be measured, then a second unpreserved sample shall be taken for this measurement; and

   ii. If the sample is shipped in its original container to a certified environmental laboratory or storage area, acidification of the sample (in its original container) may be delayed for a period not to exceed five days.

2. The Department recommends a maximum holding time of six months for drinking water samples that are to be subject to radiochemical measurements for any parameter, except radon-222, radium-224 and the "48 Hour Rapid Gross Alpha Test."

   i. For radon-222 and radium 224, the Department recommends a maximum holding time of four days.

   ii. For the "48-Hour Rapid Gross Alpha Test" conducted for conformance with the PWTA, the maximum holding time to initial counting of the plancheted sample shall be 48 hours.

TABLE 9.3 REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND MAJOR INSTRUMENTATION FOR RADIOCHEMICAL MEASUREMENTS IN DRINKING WATER SAMPLES

Parameter	**Preservation**	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft.)	**Instrumentation**
Gross alpha	Conc HCl or HNO_3 to pH 2[1]	P or G	A or B
Gross beta	Conc HCl or HNO_3 to pH 2[1]	P or G	A
Strontium-89	Conc HCl or HNO_3 to pH 2	P or G	A

Parameter	**Preservation**	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft.)	**Instrumentation**
Strontium-90	Conc HCl or HNO_3 to pH 2	P or G	A
Radium-226	Conc HCl or HNO_3 to pH 2	P or G	A, B or D
Radium-228	Conc HCl or HNO_3 to pH 2	P or G	A
Iodine-131	None	P or G	A
Tritium	None	G	E
Uranium	Conc HCl or HNO_3 to pH 2	P or G	F
Photonemitters (including Cobalt-60, Ruthenium-106, and Zinc-65)	Conc HCl or HNO_3 to pH 2	P or G	C
Radon-222	Cool 4°C	G	E
48-Hour Rapid Gross Alpha	Conc HCl or HNO_3 to pH 2[1]	P or G	A
Radium (Total)	Conc HCl or HNO_3 to pH 2[1]	P or G	A
Radium-224	Conc HCl or HNO_3 to pH 2[1]	P or G	C

REFERENCE FOR TABLE 9.3 (DRINKING WATER SAMPLES)

[1]If HCl is used to acidify samples that are to be analyzed for gross alpha or gross beta activities, the acid salts shall be converted to nitrate salts before transfer of the samples to planchets.

(e) Non-potable water samples that are to be subject to radiochemical measurements shall be handled and preserved in accordance with the requirements of Table 9.4 and the requirements of (e)1 below. Table 9.4 incorporates requirements from 40 CFR 136.3. If there is any conflict between Table 9.4 and 40 CFR 136.3 (including any amendments or supplements), 40 CFR 136.3 shall control.

1. Except as provided in (e)i or ii below, the sample shall be acidified at the time of collection, in accordance with the requirements listed under "Preservation" in Table 9.3. A minimum of 16 hours shall elapse between acidification and analysis.

i. If suspended solids activity is to be measured, a second unpreserved sample must be taken for this measurement; and

ii. If the sample is shipped in its original container to a certified environmental laboratory or storage area, acidification of the sample (in its original container) may be delayed for a period not to exceed five days.

TABLE 9.4 REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES FOR RADIOCHEMICAL MEASUREMENTS IN NON-POTABLE WATER SAMPLES

Parameter	**Preservation**	**Container** ("P" means plastic, hard or soft, "G" means glass, hard or soft.)	**Maximum Holding Time**
Radiochemical Tests	HNO_3 to pH < 2	P, G	6 months
Alpha-Total	HNO_3 to pH < 2	P, G	6 months
Alpha-Counting error	HNO_3 to pH < 2	P, G	6 months
Beta-Total	HNO_3 to pH < 2	P, G	6 months
Beta-Counting error	HNO_3 to pH < 2	P, G	6 months
Radium-Total	HNO_3 to pH < 2	P, G	6 months
Radium-226	HNO_3 to pH < 2	P, G	6 months
Radon-222	Cool 4°C	P, G	4 days (recommended)

(f) Solid/hazardous waste program samples (non-aqueous or solid and chemical materials matrix) shall be handled and preserved in accordance with the requirements of Table 9.5. Table 9.5 incorporates requirements from SW-846. If there is any conflict between Table 9.5 and SW-846 (including any amendments or supplements), SW-846 shall control.

TABLE 9.5 REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES FOR SOLID/HAZARDOUS WASTE PROGRAM SAMPLES (SOILS, LIQUIDS, SEDIMENTS, AND SLUDGES)

Parameter	**Container**	**Preservation**	**Maximum Holding Time**
Volatile Organics for soils/sediments & sludges	Glass, Teflon®-lined cap	Cool 4°C	14 days
Volatile organics for concentrated waste samples	Glass, Teflon®-lined cap	None	14 days
Volatile organics in liquid samples	Glass, Teflon®-lined cap	Cool 4°C, if residual Cl_2 add $Na_2S_2O_3$ and HCl to pH < 2	14 days
Acrolein and Acrylonitrile in liquid samples	Glass, Teflon®-lined cap	Cool 4°C Adjust to pH 4-5	14 days
Semivolatile organics/ organochlorine pesticides/PCBs and herbicides for soils/sediments, and sludges	Glass, Teflon®-lined cap	Cool 4°C	14 days until extraction; 40 days after extraction

Parameter	Container	Preservation	Maximum Holding Time
Semivolatile organics/ organochlorine pesticides/PCBs and herbicides for concentrated waste samples	Glass, Teflon®-lined cap	Cool 4°C	14 days until extraction; 40 days after extraction
Metals except Cr VI and Hg (total) for liquid samples	P, G	Cool 4°C, HNO_3 to pH < 2	6 months
Metals except Cr VI and Hg (dissolved) for liquid samples	P, G	Cool 4°C, Filter onsite HNO_3 to pH < 2	6 months
Metals except Cr VI and Hg (suspended) for liquid samples	P, G	Cool 4°C Filter onsite	6 months
Metals except Cr VI and Hg for solid samples	P, G	Cool 4°C	6 months
Chromium VI for solid samples	P, G	Cool 4°C	24 hours
Chromium VI for liquid samples	P, G	Cool 4°C	24 hours
Mercury (total) for liquid samples	P, G	HNO_3 to pH < 2	28 days
Mercury (dissolved) for liquid samples	P, G	Filter onsite HNO_3 to pH < 2	28 days
Mercury (total) for solid samples	P, G	Cool 4°C	28 days

(g) CERCLA-CLP aqueous and non-aqueous samples shall be handled and preserved in accordance with the requirements of Table 9.6. Table 9.6 incorporates requirements from the USEPA's "Statement of Work for Organics Analysis," USEPA Contract Laboratory Program, Revision OLM03.1, August 1994; and "Statement of Work for Inorganic Analysis," USEPA Contract Laboratory Program, Document No. ILM04 (undated). If there is any conflict between Table 9.6 and one of these USEPA publications (including any amendments or supplements), the USEPA publication shall control. The maximum holding times specified in Table 9.6 begin at the validated time of sample receipt (VTSR) at the laboratory. The VTSR is the time shown on the chain-of- custody form as the time at which the laboratory received the sample.

TABLE 9.6 REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES FOR CERCLA-CLP AQUEOUS AND NON-AQUEOUS

Parameter	Sample Container	Preservation	Maximum Holding Time
Volatile Organics (Aqueous Sample)	Glass, white polypropylene or black phenolic plastic screw cap, Teflon®-lined septum	Cool, 4°C, dark 0.08% $Na_2S_2O_3$ if residual Cl_2	10 days

Parameter	Sample Container	Preservation	Maximum Holding Time
Volatile Organics (Non-Aqueous Sample)	Glass, polypropylene cap, white Teflon® liner	Cool, 4°C, dark	10 days
Base Neutral/Acid Extractable (semi-volatile) Organics	Amber Glass, white polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C, dark	Extraction- Aqueous continuous liquid-liquid extraction must be started within 5 days Non-Aqueous-10 days Analysis- 40 days from validated time of sample receipt (at the laboratory)
Pesticide/PCBs	Amber Glass, white polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C, dark	Extraction- Aqueous continuous liquid-liquid extraction must be started within 5 days Non-Aqueous-10 days Analysis-40 days from validated time of sample receipt (at the laboratory)
High Level Volatile Organic Waste Samples (Aqueous)	Glass, black phenolic plastic or white polyethylene screw cap, Teflon®-lined septum	Cool, 4°C, dark	Analysis completed within 40 days of validated time of sample receipt (at the laboratory)
High Level Volatile Organic Waste Samples (Non-Aqueous)	Glass, black phenolic plastic or polypropylene cap, white Teflon® liner	Cool, 4°C, dark	Analysis completed within 40 days of validated time of sample receipt (at the laboratory)
High Concentration Extractable Organic Waste Samples	Glass, white polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C, dark	Analysis completed within 40 days of validated time of sample receipt (at the laboratory)
High Concentration Aroclors and Toxaphene Samples	Glass, white polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C, dark	Analysis completed within 40 days of validated time of sample receipt (at the laboratory)
Polychlorinated Dibenzo-p-Dioxins (PCDDs) and Dibenzofurans (PCDFs)	Glass, polypropylene cap, white Teflon® liner	Cool, 4°C, dark	None

Parameter	**Sample Container**	**Preservation**	**Maximum Holding Time**
Low Level Metals Aqueous except Hg	Plastic bottle, plastic cap, plastic liner	HNO_3 to pH<2	180 days
Cyanide, total amenable to chlorination	Plastic bottle, plastic cap, plastic liner	Aqueous - 0.6g ascorbic acid if residual Cl_2 NaOH to pH>12, cool, 4°C, $CaCO_3$ in presence of sulfide	14 days
Total Nitrogen	Plastic bottle, plastic cap, plastic liner	H_2SO_4 to pH<2	28 days
Fluoride	Plastic bottle, plastic cap, plastic liner	Cool, 4°C until analysis	28 days
Metals except Hg (Aqueous)	Plastic bottle, plastic cap, plastic liner	HNO_3 to pH<2	180 days
Metals except Hg (Non-Aqueous)	Flint glass bottle, black phenolic cap, polyethylene liner	Cool, 4°C	180 days
Hg (Aqueous)	Plastic bottle, plastic cap, plastic liner	HNO_3 to pH<2	28 days
Hg (Non-Aqueous)	Flint glass bottle, black phenolic cap, polyethylene liner	HNO_3 to pH<2	28 days
Cyanide (Aqueous)	Plastic bottle, plastic cap, plastic liner	0.6g ascorbic acid if residual Cl_2 NaOH to pH>12, cool, 4°C until analyzed, $CaCO_3$ in presence of sulfide	14 days
Cyanide (Non-Aqueous)	Plastic bottle, plastic cap, plastic liner	Cool, 4°C	14 days
High Level Metals except Hg (Aqueous)	Flint glass, white polypropylene or black phenolic, baked polyethylene cap	HNO_3 to pH<2	180 days
High Level Metals except Hg (Non-Aqueous)	Flint glass, white polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C	180 days

Parameter	**Sample Container**	**Preservation**	**Maximum Holding Time**
High Level Hg (Aqueous)	Flint glass, white polypropylene or black phenolic, baked polyethylene cap	HNO_3 to pH<2	28 days
High Level Hg (Non-Aqueous)	Flint glass, white polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C	28 days
Low Level Volatile Organics	Glass, black phenolic or white polypropylene screw cap, Teflon®-lined septum	Cool, 4°C, dark, 0.008% $Na_2S_2O_3$	7 days
Low Level Semivolatile Organics	White polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C, dark	Extraction- continuous extraction must be started within 5 days Analysis-40 days from start of extraction
Low Level Pesticides/PCBs Organics	Amber glass, white polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C, dark	Extraction- continuous extraction must be started within 5 days Analysis-40 days from start of extraction

(h) Air and emissions samples shall be handled and preserved in accordance with the requirements of Table 9.7. Table 9.7 includes applicable requirements from the methods for the analysis of airborne emissions, listed in 40 CFR 51M, 60A, 61B, and 63A; and The Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA document EPA/625/R-96/010b). If there is any conflict between Table 9.7 and the USEPA rule or publication (including any amendments or supplements), the USEPA rule or publication shall control.

TABLE 9.7 REQUIRED CONTAINER, PRESERVATION TECHNIQUES, AND HOLDING TIMES FOR AIR AND EMISSIONS SAMPLES

Parameter	**Preservation**	**Container**	**Maximum Holding Time**
All Parameters Determined by TO-15	None	EPA-Approved Canister	30 days
All Parameters Determined by TO-17	Cool 4°C in organic solvent-free environment	Stainless steel, glass, or glass lined stainless steel tubes packed with >200 mg solid adsorbent	30 days

7:18-9.5 Requirements for acute toxicity testing samples

(a) Dilution water samples for acute toxicity testing shall be collected, handled and preserved in accordance with the following requirements:

1. Dilution water is acceptable for use in a toxicity test only if healthy test organisms survive in it through acclimation pursuant to N.J.A.C. 7:18-7.4(e)3ii, without showing any signs of stress, including but not limited to, abnormal behavior, discoloration, infection or disease;

2. Dilution water samples shall either be representative of the receiving water system that the effluent is discharged into, or, as designated by the Department in the NJPDES permit, be an alternate or reference water. Dilution water samples shall be collected in the following manner:

i. In non-tidal waters, dilution water samples shall be collected from a location outside of the influence, but upstream of, the effluent, except when the effluent is discharged into the headwaters of the water body. Under those conditions the dilution water sample shall be obtained in accordance with the procedures specified in (a)4 below;

ii. In estuarine waters, dilution water samples shall be collected from a location outside of the influence of the effluent, except when the effluent is discharged into the headwaters of the water body. Under those conditions the dilution water sample shall be obtained in accordance with the procedures specified in (a)4 below. Samples shall also be collected during the outgoing tide up to and during low slack tide;

iii. In marine waters (that is, tidal saltwaters), dilution water samples shall be collected from a location outside of the influence of the effluent being tested;

iv. The sampling location shall be such that the salinity of the sample shall be within the salinity range for the receiving water immediately outside of the effluent mixing zone;

v. When samples are collected from streams or rivers, an integrated sample shall be collected. This is a sample that is collected from bottom to the top of the water column so that the sample collected is proportional to the flow. If only a grab sample can be taken it should be collected at mid-depth in midstream;

vi. When samples are collected from reservoirs or lakes, the effects of seasonal stratification, runoff, and previous rain fall upon the chemical-physical characteristics of the water shall be considered; and

vii. If the receiving water has a natural pH below 5.0 units, then the dilution water samples shall be adjusted to pH of 5.0 prior to their use in test organism acclimation and/or toxicity testing.

3. If the receiving water is influenced by other point sources of pollution so as to disqualify its use as dilution water in accordance with the NJPDES permit, then the dilution water sample(s) shall be either obtained from a location just above the other point sources in the case of streams, or outside the zone of influence of other point sources in the case of other water bodies;

4. If acceptable dilution water cannot be obtained from the receiving water at any location because an effluent is discharged into the receiving water headwaters, then some other unpolluted water, meeting the following requirements, shall be used as an alternate in the following order of preference:

   i. Another surface water or groundwater having a natural quality similar to that of the receiving water prior to its pollution may be used; or

   ii. Reconstituted or artificial freshwater or saltwater having a natural quality similar to that of the receiving water prior to its pollution may be used; and

   iii. An alternate dilution water shall have a total hardness, alkalinity, salinity, and specific conductance within 25 percent and a pH within 0.4 units of the receiving water prior to its pollution, but not less than a pH of 5.0 units.

5. The preparation of reconstituted freshwater or saltwater, as an alternate dilution water, shall comply with the following:

   i. Preparation of reconstituted freshwater shall be by the addition of reagent grade chemicals to laboratory pure water as specified in SM16 p. 699-701, or EPA Acute Methods #027F-1993; and

   ii. Preparation of a substitute or reconstituted saltwater dilution water shall either be through the use of a hypersaline brine as specified in N.J.A.C. 7:18-7.4(b)8ii, by using commercial sea salts, or by the addition of reagent grade chemicals to laboratory pure water as specified in SM16, p. 699-70l or EPA Acute Methods #027F-1993.

6. Alteration of dilution water samples shall be limited to the following:

   i. Filtration through screening made of a non-toxic material as specified in N.J.A.C. 7:18-7.3(a)1. This screening shall have a mesh of 2mm or larger for fishes or 0.45 microns or larger for zooplankton and macrocrustaceans; and

   ii. Adjustment of the salinity of dilution water samples shall only be by either the addition of laboratory pure water to lower the salinity or by the addition of either a hypersaline brine or artificial sea salts to raise the salinity.

      (1) Only a natural water source, meeting the requirements for laboratory grade salt waters, shall be used to produce a hypersaline brine; and

      (2) A hypersaline brine shall not exceed a salinity of 100 ppt.

7. Sample collection and transport containers shall meet the requirements listed in N.J.A.C. 7:18-7.3(a)13. Prior to sample collection all containers shall be rinsed with the dilution water and then filled so that there should be little or no air in the container neck or cap;

8. Dilution water sample storage shall be in covered containers constructed of non- toxic materials as specified in N.J.A.C. 7:18-7.3(a)13; and

9. Except for samples of laboratory grade water being used as an alternate or reference dilution water as specified in (a)4 above, samples shall not be stored for more than 150 hours and shall be collected as close as possible to the time of use.

(b) Effluent samples for acute toxicity testing shall be collected, handled and preserved in accordance with the following requirements:

1. The effluent sampling location shall be the same as that specified in the NJPDES permit as the toxicity test analysis sampling point unless otherwise specified by the Department. The Department may specify an alternative sampling location when either of the following conditions occur:

i. When there is better access to the effluent at a point located between the final treatment and the discharge outfall. That point shall be the sampling point; or

ii. When the chlorinated effluent is dechlorinated prior to discharge, and the purpose of the test is to determine the toxicity levels of the dechlorinated effluent. The sampling point shall be located after dechlorination.

2. Samples shall be representative of the discharge, taking into account the plant operating conditions and the retention time of the effluent in the wastewater treatment plant;

3. When performing flow-through toxicity tests the following sampling procedures shall be adhered to in order to insure a representative effluent sample:

i. If the facility discharges continuously, the effluent shall be pumped directly and continuously from the discharge line to the dilutor system for the duration of the test; or

ii. If the facility discharges continuously but the effluent cannot be pumped directly and continuously to the dilutor system, then the following procedures shall be used:

(1) Twenty-four hour composite samples consisting either of equal volumes taken once every hour, or flow-proportionate composite sampling shall be collected and transported to the dilutor daily for the duration of the test. Any surplus from the previous sample is to be discarded and the holding container refilled with fresh effluent sample.

iii. If the facility discharges intermittently, one of the following procedures shall be used:

(1) When the effluent is discharged continuously only during a single work shift, or two successive work shifts, at least one composite sample of sufficient volume to supply the dilutor for 24 hours shall be collected daily during a single discharge period for the duration of the test;

(2) When the facility retains the wastewater during a work shift, then treats and releases it in a batch discharge, a single grab sample of sufficient volume to supply the dilutor for the intervening hours shall be collected and stored in accordance with (b)10 below; and

(3) When the facility discharges wastewater to an estuary during an outgoing tide, a single grab sample or composite sample (as specified by the Department in the NJPDES permit), of sufficient volume to set up the toxicity test shall be collected on the outgoing tide. This procedure is repeated for the duration of flow-through toxicity tests.

4. In order to insure the collection of a representative effluent sample for a static or renewal toxicity test, the following sampling procedures shall be followed:

i. If a static toxicity test is to be conducted, effluent samples shall be collected only at the beginning of the test. If a renewal toxicity test is to be conducted, then effluent samples shall be collected at the beginning of the test and the test solutions renewed at least daily throughout the duration of the test. Sampling for these renewal solutions shall comply with the procedures specified in (b)4ii and iii below, and in (b)5 below;

ii. If the facility discharges wastewater continuously the following procedures shall be used:

(1) Twenty-four hour composite samples consisting of equal volumes collected at least once every hour or a flow proportionate 24 hour composite sample shall be collected and used to set up a single toxicity test. This procedure is repeated for the duration of renewal toxicity tests.

iii. If the facility discharges wastewater intermittently one of the following procedures shall be used:

(1) When the effluent is discharged continuously only during a single work shift, or two successive work shifts, at least one composite sample, of sufficient volume to set up the toxicity test, shall be collected. This procedure is repeated for the duration of renewal toxicity test;

(2) When a facility retains the wastewater during a work shift, then treats and releases it in a batch discharge, a grab sample shall be collected during the discharge period. Sufficient volume of sample shall be collected for the set up and renewal of the toxicity test during the hours intervening between effluent discharges. Effluent samples shall be collected and stored in accordance with (b)10 below; and

(3) When the facility discharges wastewater to an estuary only during an outgoing tide, a single grab sample or composite sample (as specified by the Department in the NJPDES permit), of sufficient volume to set up the toxicity test shall be collected on the outgoing tide. This procedure is repeated for the duration of renewal toxicity tests.

5. When the effluent to be sampled is a stormwater discharge, the following sampling procedures shall be used for static, renewal, and flow through toxicity tests:

i. The stormwater discharge shall be a grab or composite sample either directly from the discharge pipe during the precipitation event or from the retention pond during or immediately after the precipitation event unless otherwise specified by the Department in the NJPDES permit; and

ii. Sufficient sample shall be collected during runoff from a precipitation event on the first day of sampling to provide either for the set up and renewal, where applicable, or the static or renewal toxicity test over its duration, or for the uninterrupted operation of the dilutor system over the duration of the flow through toxicity test. Samples shall be collected in this manner for each day the discharge persists during the test period. Test sample renewal shall be conducted with the newest sample available during the test period. Stormwater samples not used immediately shall be stored in approved containers as specified in N.J.A.C. 7:18-7.3(a)14., and preserved at 1.0 to 4.4 degrees Celsius. Samples shall not be stored for longer than 120 hours prior to use.

6. Alteration of effluent samples shall be limited to:

i. Filtration through screening having a mesh of two mm or larger;

ii. Introduction of dry artificial sea salts or a hypersaline brine for the purpose of adjusting the effluent test concentration salinity according to the procedures specified in N.J.A.C. 7:18-7.5(o);

iii. A laboratory may adjust an effluent sample using a dechlorinating agent to reduce the level of chlorine in an effluent sample. Since anhydrous sodium thiosulfate and other dechlorinating agents may contribute to sample toxicity, the laboratory shall include an additional control containing the dechlorinating agent in the acute toxicity test in addition to the control chambers specified in N.J.A.C. 7:18-7.5(b)5. The amount of dechlorinating agent in the control shall be equal to that contained in the highest effluent concentration tested. The laboratory shall document and report adjustments and treatments of the effluent along with the test results. The laboratory shall include in the documentation the type and amount of dechlorinating agent which is added and the chlorine levels before and after dechlorination.

7. Composite or grab sample collection and handling containers shall meet the requirements listed in N.J.A.C. 7:18-7.3(a)14. Prior to sample collection, containers shall either be rinsed with the effluent or laboratory pure water, as specified in N.J.A.C. 7:18-7.4(a), and then filled so that there should be no air space in either the neck or the top of the container;

8. Effluent samples shall be stored in covered, sealed, containers constructed of non-toxic materials as specified in N.J.A.C. 7:18-7.3(a)14;

9. Unless the purpose of the toxicity test is to ascertain the persistence of the toxic materials in an effluent, testing shall begin within 36 hours of the collection of an effluent. For storm water discharge, the toxicity tests shall begin within 48 hours of collection conducted in accordance with (b)5 above; and

10. Samples that are collected for offsite testing shall be chilled during or immediately after collection until adjustment to the test temperature prior to initiating the test. When the sample arrives at the laboratory, the laboratory shall log the sample in, measure the temperature of the sample, and record the temperature on the chain-of-custody form and the raw data sheet. If samples are not immediately prepared for testing, the laboratory shall store them between 1.0 and 4.4 degrees Celsius until used.

(c) The following chain-of-custody procedures shall be followed for effluent and dilution water for all composite and grab samples in acute toxicity testing.

1. Only clean or new containers, as specified in N.J.A.C. 7:18-7.3(a)13 and 14, previously rinsed with either laboratory pure water or the material being sampled, shall be used for taking composite or grab samples;

2. Labels with an identification number shall be affixed to all samples;

3. After a sample has been collected, the appropriate information as to identity of the sample shall be written on the label and the label affixed. The label shall remain affixed until the test has begun and the surplus sample has been discarded;

4. Immediately upon delivery of a sample to the certified environmental laboratory, the sample collector shall complete the appropriate chain-of-custody section of the sample report form or chain-of-custody form;

5. The chain-of-custody form shall list at a minimum the following information:

i. The sample number;

ii. The description of samples;

iii. The specific location of sample collection;

iv. The identity of person collecting the sample;

v. The date and time of sample collection;

vi. The date and time of custody transfer to laboratory (if the sample was collected by a person other than laboratory personnel);

viii. The identity of the person accepting custody (if the sample was collected by a person other than laboratory personnel);

viii. The date and time of initiation of analyses;

ix. The identity of person performing analysis; and

x. The name and identification number of environmental laboratory performing the analyses; and

6. The laboratory personnel accepting responsibility for the sample, as well as all other laboratory personnel performing the analysis on that sample shall sign the form containing the chain-of-custody information

SUBCHAPTER 10 CIVIL ADMINISTRATIVE PENALTIES AND ADMINISTRATIVE ORDERS

7:18-10.1 Purpose

(a) This subchapter establishes procedures governing the following, in connection with violations of any provision of this chapter or any provision of an order issued pursuant to this chapter:

1. The assessment of civil administrative penalties; and

2. The issuance of civil administrative orders.

7:18-10.2 Administrative orders

(a) Except as provided in (c) below, the Department may issue an administrative order against any certified environmental laboratory or other person who has violated any provision of this chapter, or any provision of an order issued pursuant to this chapter, for one or more of the following purposes:

1. To direct the laboratory or other person to comply with a provision of this chapter or of an order issued pursuant to this chapter.

2. To suspend or revoke a certified environmental laboratory's certification, in whole or in part, pursuant to N.J.A.C. 7:18-2.15; and

3. To assess civil administrative penalties in accordance with N.J.A.C. 7:18-10.3;

(b) The authority to issue an order pursuant to (a) above is in addition to any other remedies available to the Department pursuant to law.

(c) The authority to issue an order pursuant to (a) above does not apply to any violation arising in connection with the Radon/Radon Progeny-in-Air Program.

7:18-10.3 Civil administrative penalties

(a) Except as provided in (c) below, the Department may assess a civil administrative penalty against any certified environmental laboratory or other person who has violated any provision of this chapter, or any provision of an order issued pursuant to this chapter. The Department shall determine the amount of the penalty by:

1. Establishing the class of the violation that is the subject of the penalty, in accordance with N.J.A.C. 7:18-10.4; and

2. Selecting the penalty designated for the class of violation, in accordance with N.J.A.C. 7:18-10.5.

(b) The authority to assess a civil administrative penalty pursuant to (a) above is in addition to any other remedies available to the Department pursuant to law.

(c) The authority to issue a civil administrative penalty pursuant to (a) above does not apply to any violation arising in connection with the Radon/Radon Progeny-in-Air Program.

7:18-10.4 Classes of violations

(a) "Minor violation" means any violation of the requirements of this chapter or of any order issued pursuant to this chapter pertaining to laboratory administration procedures or to any laboratory operating procedures, other than specific analytical procedures. Minor violations include, but are not limited to, noncompliance with requirements pertaining to laboratory management procedures, failure to submit required fees, and failure to respond to notices of deficiencies that have not directly affected data quality. Violations of specific provisions of this chapter that are defined as minor violations include, but are not necessarily limited to:

1. N.J.A.C. 7:18-1.4(e), failure to display certification;

2. N.J.A.C. 7:18-2.11, noncompliance with requirements relating to managerial and supervisory duties;

3. N.J.A.C. 7:18-2.12(a)2 and 3, noncompliance with those criteria for compliance sample acceptance and analysis relating to personnel qualifications and laboratory management;

4. N.J.A.C. 7:18-2.14(c), failure to notify the Department of a change in the location of the laboratory;

5. N.J.A.C. 7:18-2.14(g), failure to notify the department of the completion of corrective action;

6. N.J.A.C. 7:18-2.19(a), failure to report personnel changes;

7. N.J.A.C. 7:18-2.22(b)1, failure to obtain required written statements and disclaimers; and

8. N.J.A.C. 7:18-3.2, noncompliance with laboratory facility and safety requirements.

(b) "Moderate violation" means any violation of the requirements of this chapter or of any order issued pursuant to this chapter that directly affects the quality of laboratory data. These violations include, but are not limited to, noncompliance with those requirements pertaining to analytical procedures, quality control, data validity and integrity, chain-of-custody, laboratory performance, data reporting and sample collection, recordkeeping, and handling and preservation. A failure to make available or to maintain complete records is equivalent to a violation that directly affects data quality, because the Department is unable to verify facts relevant to data quality without adequate records. Violations of specific provisions of this chapter that are defined as moderate violations include, but are not necessarily limited to:

1. N.J.A.C. 7:18-2.10, noncompliance with laboratory personnel qualification requirements;

2. N.J.A.C. 7:18-2.14(f), failure to submit a corrective action plan in response to an audit within the time period provided;

3. N.J.A.C. 7:18-2.22(b)2, failure to provide notification along with report of analysis results that the analysis results are not to be used for regulatory purposes;

4. N.J.A.C. 7:18-2.12(b), failure to follow requirements and criteria in approved method, or N.J.A.C. 7:18-2.22(a), 4.3(a), 5.3(a), 6.4(a), 8.3(a), use of unapproved methods;

5. N.J.A.C. 7:18-3.3, noncompliance with requirements for laboratory equipment, supplies, materials and instrumentation;

6. N.J.A.C. 7:18-4, noncompliance with microbiological testing procedures, including equipment requirements, chain of custody procedures, quality control procedures, standard operating procedures, record keeping and data reporting procedures;

7. N.J.A.C. 7:18-5, noncompliance with chemical testing procedures including equipment requirements, chain of custody procedures, quality control procedures, standard operating procedures, record keeping and data reporting procedures;

8. N.J.A.C. 7:18-6, noncompliance with radiochemical testing procedures including equipment requirements, radon gas progeny test procedures, chain of custody procedures, quality control procedures, standard operating procedures, record keeping and data reporting procedures;

9. N.J.A.C. 7:18-7, noncompliance with toxicity testing procedures including equipment requirements, chain of custody procedures, quality control procedures, standard operating procedures, record keeping and data reporting procedures;

10. N.J.A.C. 7:18-8, noncompliance with requirements for performing analyze-immediately measurements;

11. N.J.A.C. 7:18-9, noncompliance with criteria for sample handling and preservation, collection procedures and chain of custody procedures;

12. N.J.A.C. 7:18-2.13(b), (c), (d) (e), (f), (g), (h), and (i)3, failure to maintain records of PT samples;

13. N.J.A.C. 7:18-4.6(a), (b) and (d), failure to maintain records as required;

14. N.J.A.C. 7:18-5.6(a) and (b), failure to maintain records as required;

15. N.J.A.C. 7:18-6.7(a), (b) and (d), failure to maintain records as required;

16. N.J.A.C. 7:18-7.7(b) and (h)1., failure to maintain records as required; and

17. N.J.A.C. 7:18-8.5(a) and (b), failure to maintain records as required.

(c) "Major violation" means a violation involving the analysis of samples for the purpose of establishing compliance with a regulatory program by a laboratory that is not a certified environmental laboratory; a violation involving the analysis of samples for the purpose of establishing compliance with a regulatory program, in a manner that is beyond the scope of a laboratory's certification and ACPL; or a violation involving the falsification of records. Violations of specific provisions of this chapter that are defined as major violations include, but are not necessarily limited to:

1. N.J.A.C. 7:18-1.4(c) and 2.2(b), performance of analyses or test methods beyond the purview of a certification;

2. N.J.A.C. 7:18-1.9(a), false certification of information by the laboratory;

3. N.J.A.C. 7:18-2.2(a), noncompliance with prohibition against noncertified laboratories analyzing samples to establish compliance with a regulatory program;

4. N.J.A.C. 7:18-2.2(c), misrepresentation of certification;

5. N.J.A.C. 7:18-2.6(c)3, failure to cease compliance sampling and analyses activities governed by this chapter or the statutes pursuant to which this chapter is promulgated upon the expiration or termination of temporary approval;

6. N.J.A.C. 7:18-2.12(a)1, offering to perform services beyond the scope of the laboratory's certification;

7. N.J.A.C. 7:18-2.14(a), denial of access by department personnel for audit purposes; and

8. N.J.A.C. 7:18-2.22(a), 4.3(a), 5.3(a), 6.4(a), 8.3(a), performance of analyses beyond the scope of certification; and

9. N.J.A.C. 7:18-2.22(b)3, misrepresentations made to persons other than the Department involving the laboratory's status as a certified environmental laboratory.

7:18-10.5 Civil administrative penalty determination

(a) Each violation of any of the provisions of this chapter or of any order issued pursuant to this chapter shall constitute a separate and distinct offense.

(b) Subject to the provisions of (c) below, the matrix of civil administrative penalties for violations of any provision of this chapter is as follows:

Class of violation	**1st violation**	**2nd violation**	**3rd and subsequent violations**
Minor	$ 250	$ 500	$ 1,000
Moderate	$ 1,000	$ 2,000	$5,000
Major	$ 5,000	$10,000	$25,000

(c) Notwithstanding (b) above, the civil administrative penalty shall be $5,000 for any second or subsequent violation of any provision of this chapter arising in connection with the Safe Drinking Water Program, and which are defined as minor or moderate.

(d) The Department will treat a violation as a first violation for purposes of determining the civil administrative penalty amount if the violator has not committed the same violation in the three calendar year period immediately preceding the date of the violation at issue.

(e) The Department may reduce or increase any penalty assessed pursuant to the provisions of this subchapter, or take additional enforcement action available to it pursuant to law, on the basis of any one or more of the factors listed in (e)1 through 7 below. No such factor constitutes a defense to any violation. The factors are:

1. The compliance history of the violator;

2. The number, frequency and severity of the violations;

3. The measures taken by the violator to mitigate the effects of the current violation or to prevent the occurrence of future violations;

4. The deterrent effect of the penalty;

5. The cooperation of the violator in correcting the violation, remedying any environmental damage caused by the violation and ensuring that the violation does not recur;

6. Any unusual or extraordinary costs directly or indirectly imposed on the public by the violation; and

7. Any other extenuating, mitigating or aggravating circumstances.

7:18-10.6 Procedures for civil administrative orders, assessment of civil administrative penalties and suspension or revocation of certification

(a) Any order, notice of civil administrative penalty assessment, notice of suspension of certification or notice of revocation of certification issued pursuant to this chapter shall:

1. Be served either personally or by certified mail, return receipt requested upon the person or persons who are the subject of the order or notice;

2. Identify the person or persons claimed by the department to have violated any provision of this chapter;

3. Describe the activity or activities which are in violation;

4. Identify the specific provision or provisions of this chapter which have been violated;

5. Describe the remedial or other action which must be implemented or caused to be implemented by the violator and the time periods within which such implementation shall commence and be completed;

6. Identify the office within the Department to which any required reply or other correspondence must be directed; and

7. Advise the person or persons named in the order of the right to request an adjudicatory hearing pursuant to the provisions of N.J.A.C. 7:18-2.17;

8. In the case of a civil administrative penalty assessment, specify the amount of the civil administrative penalty to be imposed;

9. In the case of a suspension or revocation of certification, a description of the areas in which the certification is to be suspended or revoked and the specific grounds for the suspension or revocation; and

10. In the case of a suspension of certification the length of time for which a suspension will remain in effect.

(b) If a civil administrative penalty is assessed against more than one person for the same violation or violations, each shall be jointly and severally liable for the penalty assessed.

(c) Suspension or revocation of certification shall commence when the notice of suspension or revocation becomes a final order pursuant to (c)1, 2 or 3 below, or when the laboratory receives a final order in a contested case proceeding, whichever comes first. Payment of a civil administrative penalty is due when a notice of civil administrative penalty assessment becomes a final order pursuant to (c)1, 2 or 3 below, or when the laboratory receives a final order in a contested case proceeding, whichever comes first. A notice of suspension or revocation, or a notice of civil administrative penalty assessment, becomes a final order as follows:

1. If no hearing is requested pursuant to N.J.A.C. 7:18-2.17, a notice of civil administrative penalty assessment becomes a final order on the 21st day following receipt of the notice of civil administrative penalty assessment by the violator;

2. If the department denies a hearing request, a notice of civil administrative penalty assessment becomes a final order upon receipt by the violator of the notice of denial;

3. If a hearing request is submitted by the violator and subsequently withdrawn, the notice of suspension or revocation, or the notice of civil administrative penalty assessment, becomes a final order upon such withdrawal unless the violator and the department have executed an administrative consent order or comparable instrument providing otherwise.

7:18-10.7 Procedures to request an adjudicatory hearing to contest an administrative order, administrative penalty assessment, suspension of certification or revocation of certification.

A laboratory or other person may request an adjudicatory hearing to contest an administrative order, notice of civil administrative penalty assessment, or suspension or revocation of certification, in accordance with N.J.A.C. 7:18-2.17.

7:18-10.8 Civil penalties for violations of N.J.S.A. 26:2D-70 et seq. (The provisions of the Radiation Protection Act governing Radon)

(a) Any person who violates any provision of N.J.S.A. 26:2D-70 (the provisions of the Radiation Protection Act governing Radon), or who violates any provision of this chapter in connection with the Radon/Radon Progeny-in-Air Program, shall be liable, upon order of a Court, to a civil penalty of not more than $2,500.

(b) Any penalty ordered as provided in this section may be imposed and collected with costs in a summary proceeding pursuant to the Penalty Enforcement Law, N.J.S.A. 2A-58-1 et seq. The Superior Court and the municipal court shall have jurisdiction to enforce the provisions of Penalty Enforcement Law in connection with penalties pursuant to this section.

7:18-10.9 Other enforcement actions

Notwithstanding the availability of any other remedies, the department may, at its discretion seek any other remedies it may have available pursuant to applicable law, including but not limited to, injunctive relief and civil penalties and criminal penalties.