



Rules of
Department of Natural Resources
Division 60—Safe Drinking Water Commission
Chapter 5—Laboratory and Analytical
Requirements

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**Title 10—DEPARTMENT OF
NATURAL RESOURCES****Division 60—Safe Drinking Water
Commission****Chapter 5—Laboratory and Analytical
Requirements****10 CSR 60-5.010 Acceptable and Alternate
Procedures for Analysis**

PURPOSE: This rule lists manuals containing acceptable analysis procedures for determination of contaminant levels.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Inorganic and Secondary Contaminants. Unless substitute methods are approved by the U.S. Environmental Protection Agency (EPA), analysis shall be conducted in accordance with the inorganic and secondary contaminant analytical methods in paragraphs 40 CFR 141.23(k)(l) and 40 CFR 143.4(b) of the July 1, 2021, *Code of Federal Regulations*, which are incorporated by reference in this rule. This does not include later amendments or additions. The *Code of Federal Regulations* as published by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(2) Organic Contaminants. Unless substitute methods are approved by the EPA, analysis shall be conducted in accordance with the organic contaminant analytical methods in paragraph 40 CFR 141.24(e) of the July 1, 2021, *Code of Federal Regulations*, which is incorporated by reference in this rule. This does not include later amendments or additions. The *Code of Federal Regulations* as published by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(3) Microbiological Contaminants and

Turbidity. Unless substitute methods are approved by EPA, analysis shall be conducted in accordance with the microbiological contaminant and turbidity analytical methods in 40 CFR 141.21(f), 40 CFR 141.74(a)(1), 40 CFR 141.704(a), and 40 CFR 141.852 of the July 1, 2021, *Code of Federal Regulations*, which is incorporated by reference in this rule. This does not include later amendments or additions. The *Code of Federal Regulations* as published by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(4) Radiological Contaminants. Unless substitute methods are approved by the EPA, analysis shall be conducted in accordance with the radiological contaminant analytical methods in paragraphs 40 CFR 141.25(a) and (b) of the July 1, 2021, *Code of Federal Regulations*, which is incorporated by reference in this rule. This does not include later amendments or additions. The *Code of Federal Regulations* as published by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(5) Disinfection Byproducts, Residual Disinfectant Concentrations, and Disinfection Byproduct Precursors. Unless substitute methods are approved by the EPA, analysis shall be conducted in accordance with the disinfection byproduct, residual disinfectant concentration, and disinfection byproduct precursor analytical methods in 40 CFR 141.74(a)(2) and 40 CFR 141.131 of the July 1, 2021, *Code of Federal Regulations*, which is incorporated by reference in this rule. This does not include later amendments or additions. The *Code of Federal Regulations* as published by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(6) Sample collection for the contaminants referenced in this rule must be conducted using the sample preservation, container, and maximum holding time procedures specified in the following procedures, which are incorporated by reference, or in accordance with procedures contained in the appropriate analytical method. The incorporation by reference does not include later amendments or additions. The *Code of Federal Regulations* as published

by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(A) Inorganic contaminant sample collection procedures in 40 CFR 141.23(k)(2) of the July 1, 2021, *Code of Federal Regulations* are incorporated by reference.

(7) The department may reduce the total number of samples a system must analyze by allowing the use of compositing. Compositing shall be conducted according to the following procedures, which are incorporated by reference. The incorporation by reference does not include later amendments or additions. The *Code of Federal Regulations* as published by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(A) Sample compositing procedures for inorganic contaminants in 40 CFR 141.23(a)(4) of the July 1, 2021, *Code of Federal Regulations* are incorporated by reference.

(B) Sample compositing procedures for volatile organic contaminants in 40 CFR 141.24(f)(14) of the July 1, 2021, *Code of Federal Regulations* are incorporated by reference.

(C) Sample compositing procedures for synthetic organic contaminants in 40 CFR 141.24(h)(10) of the July 1, 2021, *Code of Federal Regulations* are incorporated by reference.

(D) Sample compositing procedures for radiological contaminants in 40 CFR 141.26(a)(4) of the July 1, 2021, *Code of Federal Regulations* are incorporated by reference.

(E) Sample compositing procedures for lead and copper in 40 CFR 141.88(a)(1)(iv) of the July 1, 2021, *Code of Federal Regulations* are incorporated by reference.

(8) Detection Limits.

(A) Detection limits for inorganic contaminants in 40 CFR 141.23(a)(4)(i) of the July 1, 2021, *Code of Federal Regulations*, which is incorporated by reference in this rule. This does not include later amendments or additions. The *Code of Federal Regulations* as published by the U.S. Government Publishing Office available at <http://bookstore.gpo.gov/> or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis,



MO 63197-9000.

(B) Practical Quantitation Levels (PQL) for lead and copper in 40 CFR 141.89(a)(1)(ii)(A) and (B) of the July 1, 2021, Code of Federal Regulations, which is incorporated by reference in this rule. This does not include later amendments or additions. The Code of Federal Regulations as published by the U.S. Government Publishing Office available at http://bookstore.gpo.gov/ or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(C) Detection limit for volatile organic contaminants in 40 CFR 141.24(f)(7) of the July 1, 2021, Code of Federal Regulations, which is incorporated by reference in this rule. This does not include later amendments or additions. The Code of Federal Regulations as published by the U.S. Government Publishing Office available at http://bookstore.gpo.gov/ or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(D) Detection limits for synthetic organic contaminants in 40 CFR 141.24(h)(13)(ii) and 141.24(h)(18) of the July 1, 2021, Code of Federal Regulations, which is incorporated by reference in this rule. This does not include later amendments or additions. The Code of Federal Regulations as published by the U.S. Government Publishing Office available at http://bookstore.gpo.gov/ or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(E) Detection limits for radiological contaminants in 40 CFR 141.25(c) of the July 1, 2021, Code of Federal Regulations, which is incorporated by reference in this rule. This does not include later amendments or additions. The Code of Federal Regulations as published by the U.S. Government Publishing Office available at http://bookstore.gpo.gov/ or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(F) Detection limits for disinfection byproducts in 40 CFR 141.64 of the July 1, 2021, Code of Federal Regulations, which is incorporated by reference in this rule. This does not include later amendments or additions. The Code of Federal Regulations as published by the U.S. Government Publishing Office available at http://bookstore.gpo.gov/ or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

(9) Analytical Methods for Source Water Monitoring. Unless substitute methods are approved by the department, analysis shall be conducted in accordance with the analytical methods in 40 CFR 141.402(c) of the July 1, 2021, Code of Federal Regulations, which is incorporated by reference in this rule. This does not include later amendments or additions. The Code of Federal Regulations as published by the U.S. Government Publishing Office available at http://bookstore.gpo.gov/ or for mail orders, print and fill out the order form online and mail to U.S. Government Publishing Office, PO Box 979050, St. Louis, MO 63197-9000.

AUTHORITY: sections 640.100 and 640.125.1., RSMo 2016. * Original rule filed May 4, 1979, effective Sept. 14, 1979. Amended: Filed April 14, 1981, effective Oct. 11, 1981. Amended: Filed June 2, 1988, effective Aug. 31, 1988. Rescinded and readopted: Filed Dec. 4, 1990, effective July 8, 1991. Rescinded and readopted: Filed March 31, 1992, effective Dec. 3, 1992. Amended: Filed Aug. 4, 1992, effective May 6, 1993. Amended: Filed May 4, 1993, effective Jan. 13, 1994. Amended: Filed Feb. 1, 1996, effective Oct. 30, 1996. Amended: Filed July 1, 1999, effective March 30, 2000. Amended: Filed Dec. 15, 1999, effective Sept. 30, 2000. Amended: Filed April 15, 2003, effective Jan. 30, 2004. Amended: Filed Feb. 17, 2004, effective Nov. 30, 2004. Amended: Filed Feb. 27, 2009, effective Oct. 30, 2009. Amended: Filed April 14, 2010, effective Dec. 30, 2010. Amended: Filed Oct. 17, 2011, effective May 30, 2012. Amended: Filed Aug. 12, 2015, effective March 30, 2016. Amended: Filed April 29, 2021, effective Dec. 30, 2021.

*Original authority: 640.100, RSMo 1939, amended 1978, 1981, 1982, 1988, 1989, 1992, 1993, 1995, 1996, 1998, 1999, 2002, 2006, 2012, 2014, and 640.125, RSMo 1978, amended 1998.

10 CSR 60-5.020 Laboratory Certification

PURPOSE: This rule establishes that required analyses must be done by laboratories certified by the department.

(1) For the purpose of determining compliance with this chapter, analytical results will be acceptable only if the samples have been analyzed by a laboratory certified by the department.

(A) Any laboratory seeking certification from the department for chemical or bacteriological analyses shall—

1. Submit a completed application, in a format provided by the department, with the applicable fee(s) pursuant to 10 CSR 60-

16.020;

2. Successfully pass a certification audit conducted by the department or the Department of Health and Senior Services; and

3. Demonstrate proficiency pursuant to the requirements of this rule through the analysis of performance evaluation samples.

(B) Any laboratory seeking certification for chemical or bacteriological analyses by reciprocity shall—

1. Submit a completed application, in a format provided by the department, with the applicable certification fee pursuant to 10 CSR 60-16.020. An audit fee is not required if the audit is not performed by the department or the Department of Health and Senior Services;

2. Submit a copy of the successful audit from the appropriate certifying authority granting the certification and a copy of the certificate with the valid expiration date; and

3. Demonstrate proficiency pursuant to the requirements of this rule through the analysis of performance evaluation samples.

(C) Certification will be issued for a period of three (3) years.

(2) To receive approval to conduct analyses for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium the laboratory must—

(A) Analyze performance evaluation samples provided by a nationally accredited proficiency-testing provider at least once per year for each analyte and by each method used to analyze compliance samples for which the laboratory seeks certification; and

(B) Achieve quantitative results on the analyses that are within the following acceptance limits:

Contaminant	Acceptance Limit
Antimony	±30% at ≥0.006 mg/l
Asbestos	2 standard deviations based on study statistics
Barium	±15% at ≥0.15 mg/l
Beryllium	±15% at ≥0.001 mg/l
Cadmium	±20% at ≥0.002 mg/l
Chromium	±15% at ≥0.01 mg/l
Copper	±10% at ≥0.50 mg/l
Fluoride	±10% at ≥ to 10 mg/l
Lead	±30% at ≥0.005 mg/l
Mercury	±30% at ≥0.0005 mg/l
Nickel	±15% at ≥0.01 mg/l
Nitrate	±10% at ≥0.4 mg/l
Nitrite	±15% at ≥0.4 mg/l
Selenium	±20% at ≥ 0.01 mg/l
Thallium	±30% at ≥ 0.002 mg/l



(3) To receive certification to conduct analyses for the contaminants in 10 CSR 60-4.100(2)(A)1.-8. and (B)1.-13., the laboratory must—

(A) Analyze performance evaluation samples provided by a nationally accredited proficiency-testing provider at least once per year for each analyte and by each method used to analyze compliance samples for which the laboratory seeks certification;

(B) Achieve the quantitative acceptance limits in subsections (3)(C) and (D) of this rule for at least eighty percent (80%) of the regulated organic chemicals listed in 10 CSR 60-4.100(2)(A)1.-8. and (B)1.-13.;

(C) Achieve the quantitative results on the analyses performed under subsection (3)(A) of this rule that are within plus or minus twenty percent ($\pm 20\%$) of the actual amount of the substances in the performance evaluation sample when the actual amount is greater than or equal to 0.010 mg/l;

(D) Achieve quantitative results on the analyses performed under subsection (3)(A) of this rule that are within plus or minus forty percent ($\pm 40\%$) of the actual amount of the substances in the performance evaluation sample when the actual amount is less than 0.010 mg/l; and

(E) Achieve a method detection limit of 0.0005 mg/l.

(4) To receive certification for vinyl chloride, the laboratory must—

(A) Analyze performance evaluation samples provided by a nationally accredited proficiency-testing provider at least once per year for each analyte and by each method used to analyze compliance samples for which the laboratory seeks certification;

(B) Achieve quantitative results on the analyses performed under subsection (4)(A) of this rule that are within plus or minus forty percent ($\pm 40\%$) of the actual amount of vinyl chloride in the performance evaluation sample;

(C) Achieve a method detection limit of 0.0005 mg/l; and

(D) Obtain certification for the contaminants listed in 10 CSR 60-4.100(2)(A)1.-8. and (B)1.-13.

(5) To receive certification to conduct analyses for the contaminants in 10 CSR 60-4.040(1), the laboratory must—

(A) Analyze performance evaluation samples provided by a nationally accredited proficiency-testing provider at least once per year for each analyte and by each method used to analyze compliance samples for which the laboratory seeks certification; and

(B) Achieve quantitative results on the

analyses that are within the following acceptance limits:

Contaminant	Acceptance Limit
2,3,7,8-TCDD (Dioxin)	2 standard deviations
2,4-D	± 50
2,4,5-TP	± 50
Alachlor	± 45
Atrazine	± 45
Benzo(a)pyrene	2 standard deviations
Carbofuran	± 45
Chlordane	± 45
Dalapon	2 standard deviations
Dibromochloropropane	± 40
Di(2-ethylhexyl)adipate	2 standard deviations
Di(2-ethylhexyl)phthalate	2 standard deviations
Dinoseb	2 standard deviations
Diquat	2 standard deviations
Endothall	2 standard deviations
Endrin	± 45
Ethylene dibromide	± 40
Glyphosate	2 standard deviations
Heptachlor	± 45
Heptachlor epoxide	± 45
Hexachlorobenzene	2 standard deviations
Hexachlorocyclopentadiene	2 standard deviations
Lindane	± 45
Methoxychlor	± 45
Oxamyl	2 standard deviations
Polychlorinated biphenyls (PCBs) (as decachlorobiphenyl)	0—200
Picloram	2 standard deviations
Simazine	2 standard deviations
Toxaphene	± 45
Pentachlorophenol	± 50

(6) To receive approval to conduct analyses for copper and lead, the laboratory must—

(A) Analyze performance evaluation samples provided by a nationally accredited proficiency-testing provider at least once per year for each analyte and by each method used to analyze compliance samples for which the laboratory seeks certification;

(B) Achieve quantitative acceptance limits

for copper plus or minus ten percent ($\pm 10\%$) of the actual amount in the performance evaluation sample when the actual amount is greater than or equal to 0.050 mg/l; lead plus or minus thirty percent ($\pm 30\%$) of the actual amount in the performance evaluation sample when the actual amount is greater than or equal to 0.005 mg/l; and

(C) Achieve a method detection limit of 0.001 mg/l.

(7) Analysis for disinfection byproducts must be conducted by laboratories that have received certification by the department except that a party approved by the department must measure daily chlorite samples at the entrance to the distribution system. To receive certification to conduct analyses for the TTHM, HAA5, bromate and chlorite, the laboratory must carry out annual analyses of performance evaluation (PE) samples approved by the department. In these analyses of PE samples, the laboratory must achieve quantitative results within the acceptance limit on a minimum of eighty percent (80%) of the analytes included in each PE sample. The acceptance limit is defined as the ninety-five percent (95%) confidence interval calculated around the mean of the PE study data between a maximum and minimum acceptance limit of plus or minus fifty percent ($\pm 50\%$) and plus or minus fifteen percent ($\pm 15\%$) of the study mean.

(8) Provisional Certification.

(A) The department may, at its discretion, issue provisional certification to a laboratory that does not meet the criteria for full certification but is able to demonstrate the ability to consistently produce valid data within the acceptance limits specified in 10 CSR 60-5.

(B) A provisionally certified laboratory may analyze drinking water samples for compliance purposes, if the laboratory notifies its clients of its downgraded status in writing, on all reports.

(C) A provisionally certified laboratory may submit a written request for full certification, which the department will grant upon demonstration to the department's satisfaction that the deficiencies that resulted in the provisional certification have been corrected.

(9) Interim Certification.

(A) In the event the department or Department of Health and Senior Services cannot perform an onsite audit for any reason, the department may, at its discretion, issue interim certification until an onsite audit can be completed.

(B) Upon successful completion of the laboratory audit, the department will issue full



certification to the laboratory.

(10) Denial or Revocation of Laboratory Certificate.

(A) The department may deny an application for certification, in part or in whole, if the applying laboratory is unqualified, cannot consistently produce valid data, has practiced fraud or deceit in applying for the certificate, or has willfully violated any provision of 10 CSR 60.

(B) The department may revoke the certificate(s) of a laboratory, in part or in whole, if the department determines the laboratory has practiced fraud or deceit in obtaining the certificate; exhibited gross negligence, malpractice, or incompetence; misled or lied to a government official regarding water sample analysis; participated in sample tampering or selective sampling; falsified sample results required by 10 CSR 60; or willfully violated 10 CSR 60.

(C) The department will issue a notice of denial or revocation in writing and delivered by hand or certified mail to the laboratory's last known address. The notice shall state the reason(s) for denial or revocation and the effective date of the denial or revocation. Any laboratory whose certification is denied or revoked may appeal to the Administrative Hearing Commission pursuant to section 621.250, RSMo.

(D) A laboratory whose certificate was revoked may reapply for full certification by submitting a written request, which the department will grant upon demonstration to the department's satisfaction that the deficiencies that resulted in the revocation have been corrected.

(E) The department will not grant certification by reciprocity during the time period a laboratory's primary certification is revoked.

(11) Any laboratory whose certification is downgraded, denied, or revoked in whole or in part by the department may appeal to the Administrative Hearing Commission pursuant to section 621.250, RSMo.

(12) Notification of Major Changes. Certified laboratories shall notify the department in writing within thirty (30) days of major changes in personnel, equipment, or laboratory location. A major change in personnel occurs when the laboratory loses or replaces the laboratory supervisor, or when a trained and experienced analyst no longer is available to analyze a particular parameter for which certification has been granted.

(13) The department has the authority to allow the use of previously collected moni-

toring data for purposes of monitoring, if the data were collected and analyzed in accordance with the requirements of this rule.

(14) All lead levels measured between the Practical Quantification Level (PQL) and Method Detection Limit (MDL) must be either reported as measured or they can be reported as one-half (1/2) the PQL (0.0025 mg/l). All levels below the lead MDL must be reported as zero (0).

(15) All copper levels measured between the PQL and the MDL must be either reported as measured or they can be reported as one-half (1/2) the PQL (0.015 mg/l). All levels below the copper MDL must be reported as zero (0).

(16) Operational monitoring measurements required by 10 CSR 60-4.080(3) shall be performed on-site by persons acceptable to the department.

(17) The department will consider acceptance of analytical results from out-of-state laboratories upon written request.

*AUTHORITY: section 640.100, RSMo 2016. * Original rule filed May 4, 1979, effective Sept. 14, 1979. Rescinded and readopted: Filed March 31, 1992, effective Dec. 3, 1992. Amended: Filed Aug. 4, 1992, effective May 6, 1993. Amended: Filed May 4, 1993, effective Jan. 13, 1994. Amended: Filed Feb. 1, 1996, effective Oct. 30, 1996. Amended: Filed Dec. 15, 1999, effective Sept. 1, 2000. Amended: Filed April 29, 2021, effective Dec. 30, 2021.*

**Original authority: 640.100, RSMo 1939, amended 1978, 1981, 1982, 1988, 1989, 1992, 1993, 1995, 1996, 1998, 1999, 2002, 2006, 2012, 2014.*