



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

Title	Page
10 CSR 60-5.010 Acceptable and Alternate Procedures for Analysis	3
10 CSR 60-5.020 Laboratory Certification.....	4



**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, 2011, *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* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(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, 2011, *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* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(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 Feb. 26, 2014, *Code of Federal Regulations*, which are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(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, 2011, *Code of Federal Regulations*, which are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(5) Disinfection By-Products, Residual Disinfectant Concentrations, and Disinfection By-Product Precursors. Unless substitute methods are approved by the EPA, analysis shall be conducted in accordance with the disinfection by-product, residual disinfectant concentration, and disinfection by-product precursor analytical methods in 40 CFR 141.74(a)(2) and 40 CFR 141.131 of the July 1, 2011, *Code of Federal Regulations*, which are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(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* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by

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(A) Inorganic contaminant sample collection procedures in 40 CFR 141.23(k)(2) of the July 1, 2011, *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* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(A) Sample compositing procedures for inorganic contaminants in 40 CFR 141.23(a)(4) of the July 1, 2011, *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, 2011, *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, 2011, *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, 2011, *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, 2011, *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, 2011, *Code of Federal Regulations* are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(B) Practical Quantitation Levels (PQL) for lead and copper in 40 CFR 141.89(a)(1)(ii)(A) and (B) of the July 1, 2011, *Code of Federal Regulations* are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S.



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(C) Detection limit for volatile organic contaminants in 40 CFR 141.24(f)(7) of the July 1, 2011, *Code of Federal Regulations* are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(D) Detection limits for synthetic organic contaminants in 40 CFR 141.24(h)(13)(ii) and 141.24(h)(18) of the July 1, 2011, *Code of Federal Regulations* are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(E) Detection limits for radiological contaminants in 40 CFR 141.25(c) of the July 1, 2011, *Code of Federal Regulations* are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(F) Detection limits for disinfection by-products in 40 CFR 141.64 of the July 1, 2011, *Code of Federal Regulations* are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

(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, 2011, *Code of Federal Regulations*, which are incorporated by reference. This does not include later amendments or additions. The *Code of Federal Regulations* is published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 and is available by calling toll-free (866) 512-1800 or going to <http://bookstore.gpo.gov>.

AUTHORITY: section 640.100, RSMo Supp. 2014, and section 640.125.1., RSMo 2000. 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.*

**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.

(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 which include those substances provided by the Environmental Protection Agency (EPA) Environmental Monitoring and Support Laboratory or equivalent samples provided by the department; 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)2.-7. and (B)1.-13., the laboratory must—

(A) Analyze performance evaluation samples which include these substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the department;

(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)2.-7. 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 (±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 (±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 EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the department;

(B) Achieve quantitative results on the analyses performed under subsection (4)(A) of this rule that are within plus or minus forty percent (±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)2.-7. 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 which include those substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the department.

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

Contaminant	Acceptance Limit
	(percent)
2,3,7,8-TCDD (Dioxin)	2 standard
2,4-D	±50
2,4,5-TP	±50
Alachlor	±45
Aldicarb	2 standard deviations
Aldicarb sulfoxide	2 standard deviations
Aldicarb sulfone	2 standard deviations
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 which include those substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the department;

(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) The department has the authority to allow the use of previously collected monitoring data for purposes of monitoring, if the data were collected and analyzed in accordance with the requirements of this rule.

(9) 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).

(10) 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).

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

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

AUTHORITY: section 640.100, RSMo Supp. 1999. 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.*

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