

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175, because this action does not apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction, and will not impose substantial direct compliance costs on tribal governments or preempt tribal law. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of “covered regulatory action” in section 2–202 of the Executive order. This action is not subject to Executive Order 13045 because it does impose additional requirements beyond those imposed by state law.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer Advancement Act (NTTAA)

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 (Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, February 16, 1994) directs Federal agencies to identify and address “disproportionately high and adverse human health or environmental effects” of their actions on minority populations and low-income populations to the greatest extent practicable and permitted by law. EPA defines environmental justice (EJ) as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” EPA further defines the term fair treatment to mean

that “no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies.”

The EPA did not perform an EJ analysis and did not consider EJ in this action. Consideration of EJ is not required as part of this action because the EPA is performing a non-discretionary duty to find that a required State submission was not timely submitted, and there is no information in the record inconsistent with the stated goals of E.O. 12898 of achieving environmental justice for people of color, low-income populations, and indigenous peoples.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

L. Petitions for Judicial Review

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by April 1, 2024. Filing a petition for reconsideration by the Administrator of this final action does not affect the finality of this action for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such action. This action may not be challenged later in proceedings to enforce its requirements. (See section 307(b)(2).)

List of Subjects in 40 CFR Part 52

Environmental protection, Administrative practice and procedures, Air pollution control, Approval and promulgation of implementation plans, Incorporation by reference, Intergovernmental relations, Particulate matter, Reporting and recordkeeping requirements.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: January 23, 2024.

Martha Guzman Aceves,
Regional Administrator, Region IX.

[FR Doc. 2024–01691 Filed 1–29–24; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 141

[EPA–HQ–OW–2023–0541; FRL–11620–01–OW]

Expedited Approval of Alternative Test Procedures for the Analysis of Contaminants Under the Safe Drinking Water Act; Analysis and Sampling Procedures

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This action announces the Environmental Protection Agency’s (EPA’s) approval of alternative testing methods for use in measuring the levels of contaminants in drinking water to determine compliance with national primary drinking water regulations. The Safe Drinking Water Act authorizes EPA to approve the use of alternative testing methods through publication in the **Federal Register**. EPA is using this streamlined authority to make 93 additional methods available for analyzing drinking water samples. This expedited approach provides public water systems, laboratories, and primacy agencies with more timely access to new measurement techniques and greater flexibility in the selection of analytical methods, thereby reducing monitoring costs while maintaining public health protection.

DATES: This action is effective January 30, 2024.

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–HQ–OW–2023–0541. All documents in the docket are listed on the <https://www.regulations.gov> website. Although listed in the index, some information is not publicly available, *e.g.*, confidential business information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through <https://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT: Teresa Wells, Technical Support Branch, Standards and Risk Management Division, Office of Ground Water and Drinking Water (MS 140), Environmental Protection Agency, 26 West Martin Luther King Drive, Cincinnati, OH 45268; telephone number: (513) 569–7128; email address: wells.teresa@epa.gov.

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this action apply to me?

Public water systems are the regulated entities required to measure contaminants in drinking water samples. In addition, EPA Regions as well as States and Tribal governments with authority to administer the regulatory program for public water

systems under the Safe Drinking Water Act (SDWA) may measure contaminants in water samples. When EPA sets a monitoring requirement in its national primary drinking water regulations for a given contaminant, the agency also establishes (in the regulations) standardized test procedures for analysis of the contaminant. This action makes alternative testing methods available for particular drinking water contaminants beyond the testing

methods currently established in the regulations. EPA is providing public water systems, required to test water samples, with a choice of using either a test procedure already established in the existing regulations or an alternative testing method that has been approved in this action or in prior expedited approval actions. Categories and entities that may ultimately be affected by this action include:

| Category | Examples of potentially regulated entities | NAICS ¹ |
|--|--|--------------------|
| State, local, & Tribal governments | State, local, and Tribal governments that analyze water samples on behalf of public water systems required to conduct such analysis; State, local, and Tribal governments that directly operate community and non-transient non-community water systems required to monitor. | 924110 |
| Industry | Private operators of community and non-transient non-community water systems required to monitor. | 221310 |
| Municipalities | Municipal operators of community and non-transient non-community water systems required to monitor. | 924110 |

¹ North American Industry Classification System.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be interested in this action. Other types of entities not listed in the table could also have some interest. To determine whether your facility is affected by this action, you should carefully examine the applicability language in the *Code of Federal Regulations* (CFR) at 40 CFR 141.2 (definition of a public water system). If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

Abbreviations and Acronyms Used in This Action

- CFR: *Code of Federal Regulations*
- EPA: United States Environmental Protection Agency
- NAICS: North American Industry Classification System
- QC: Quality Control
- SDWA: The Safe Drinking Water Act
- VCSB: Voluntary Consensus Standard Bodies

II. Background

A. What is the purpose of this action?

In this action, EPA is approving 93 analytical methods for determining contaminant concentrations in drinking water samples collected under SDWA. Regulated entities required to sample and monitor may use either the testing methods already established in existing regulations or the alternative testing methods being approved in this action or in prior expedited approval actions. The new methods are listed along with other methods similarly approved through previous expedited actions in 40 CFR part 141, appendix A to subpart

C and on EPA’s drinking water methods website at https://www.epa.gov/dw_analyticalmethods.

B. What is the basis for this action?

When EPA determines that an alternative analytical method is “equally effective” (*i.e.*, as effective as a method that has already been promulgated in the regulations), SDWA allows EPA to approve the use of the alternative testing method through publication in the **Federal Register** (see section 1401(1) of SDWA). EPA is using this streamlined approval authority to make 93 additional methods available for determining contaminant concentrations in drinking water samples collected under SDWA. EPA has determined that, for each contaminant or group of contaminants listed in section III of this preamble, the additional testing methods being approved in this action are as effective as one or more of the testing methods already approved in the regulations for those contaminants. Section 1401(1) of SDWA states that the newly approved methods “shall be treated as an alternative for public water systems to the quality control and testing procedures listed in the regulation.” Accordingly, this action makes these additional 93 analytical methods legally available as options for meeting EPA’s monitoring requirements.

This action does not add regulatory language, but does, for informational purposes, update an appendix to the regulations at 40 CFR part 141 that lists all methods approved under section 1401(1) of SDWA. Accordingly, while this action is not a rule, it is updating

CFR text and therefore is being published in the “Final Rules” section of the **Federal Register**.

III. Summary of Approvals

EPA is approving 93 methods that are equally effective relative to methods previously promulgated in the regulations. By means of this action, these 93 methods are added to appendix A to subpart C of 40 CFR part 141.

A. Methods Developed by Voluntary Consensus Standard Bodies (VCSB)

1. ASTM International. EPA compared the most recent version of one ASTM International method for determination of radium-226 by radon emanation to the earlier version of the method that is currently approved in 40 CFR 141.25(a). Changes between the earlier approved version and the most recent version of the method are described more fully in Smith 2023. The revisions involve primarily editorial changes (*e.g.*, updated references, definitions, terminology, procedural clarifications, and reorganization of text). The revised method is the same as the approved version with respect to sample collection and handling protocols, sample preparation, analytical methodology, and method performance data; thus, EPA finds it is equally effective relative to the approved method.

EPA is thus approving the use of the following ASTM method for radium-226 as listed in the following table:

| ASTM revised version | Approved method | Contaminant | Regulation citation |
|-----------------------------|-----------------------------|------------------|---------------------|
| D 3454–21 (ASTM 2021) | D 3454–97 (ASTM 1997) | Radium-226 | 40 CFR 141.25(a). |

The ASTM method is available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959 or <https://www.astm.org>.

2. Standard Methods for the Examination of Water and Wastewater (Standard Methods). The 24th edition of *Standard Methods for the Examination of Water and Wastewater* (APHA 2023) was published in 2023. EPA compared 90 methods in the 24th edition to earlier versions of those methods that are

currently approved in 40 CFR parts 141 and 143. Changes between the approved version and the version of each method published in the 24th edition are summarized in Smith and Wendelken (2023) and Best (2023). The revisions primarily involve editorial changes (e.g., correction of errors, procedural clarifications and reorganization of text). The methods in the following table are the same as the earlier approved versions with respect to the sample

handling protocols, analytical procedures and method performance data. For these reasons, EPA has concluded that the versions in the 24th edition are equally effective relative to the currently approved versions in the regulations. Therefore, EPA is approving the use of 90 Standard Methods in the 24th edition for the contaminants and their respective regulations listed in the following table:

| Standard methods, 24th edition (APHA 2023) | Approved method | Contaminant | Regulation citations |
|--|---|---|--|
| 2120 B | 2120 B–01, online version (APHA 2001a). | Color | 40 CFR 143.4(b). |
| 2130 B | 2130 B–01, online version (APHA 2001b). | Turbidity | 40 CFR 141.74(a)(1). |
| 2150 B | 2150 B–97, online version (APHA 1997a). | Odor | 40 CFR 143.4(b). |
| 2320 B | 2320 B–97, online version (APHA 1997b). | Alkalinity | 40 CFR 141.23(k)(1). |
| 2510 B | 2510 B–97, online version (APHA 1997c). | Conductivity | 40 CFR 141.23(k)(1). |
| 2540 C | 2540 C–97, online version (APHA 1997d). | Total Dissolved Solids | 40 CFR 143.4(b). |
| 2550 | 2550–00, online version (APHA 2000a). | Temperature | 40 CFR 141.23(k)(1). |
| 3111 B | 3111 B–99, online version (APHA 1999a). | Calcium, copper, magnesium, nickel, sodium, iron, manganese, silver, zinc. | 40 CFR 141.23(k)(1); 40 CFR 143.4(b). |
| 3111 D | 3111 D–99, online version (APHA 1999a). | Barium, aluminum | 40 CFR 141.23(k)(1); 40 CFR 143.4(b). |
| 3112 B | 3112 B–99, online version (APHA 1999b). | Mercury | 40 CFR 141.23(k)(1). |
| 3113 B | 3113 B, 19th Edition (APHA 1995) | Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, selenium, aluminum, iron, manganese, silver. | 40 CFR 141.23(k)(1); 40 CFR 143.4(b). |
| 3114 B | 3114 B–97, online version (APHA 1997e). | Arsenic, selenium | 40 CFR 141.23(k)(1). |
| 3120 B | 3120 B–99, online version (APHA 1999c). | Barium, beryllium, calcium, chromium, copper, magnesium, nickel, silica, aluminum, iron, manganese, silver, zinc. | 40 CFR 141.23(k)(1); 40 CFR 143.4(b). |
| 3500-Ca B | 3500-Ca B–97, online version (APHA 1997f). | Calcium | 40 CFR 141.23(k)(1). |
| 3500-Mg B | 3500-Mg B–97, online version (APHA 1997g). | Magnesium | 40 CFR 141.23(k)(1). |
| 4110 B | 4110 B–00, online version (APHA 2000b). | Fluoride, nitrate, nitrite, ortho-phosphate, chloride, sulfate. | 40 CFR 141.23(k)(1); 40 CFR 143.4(b). |
| 4500-Cl D,F,G,H | 4500-Cl D,F,G,H–00, online versions (APHA 2000c). | Free chlorine | 40 CFR 141.74(a)(2); 40 CFR 141.131(c)(1). |
| 4500-Cl D,E,F,G,I | 4500-Cl D,E,F,G,I–00, online versions (APHA 2000c). | Total chlorine | 40 CFR 141.74(a)(2); 40 CFR 141.131(c)(1). |
| 4500-Cl D,F,G | 4500-Cl D,F,G–00, online versions (APHA 2000c). | Combined chlorine | 40 CFR 141.131(c)(1). |
| 4500-Cl ⁻ B,D | 4500-Cl ⁻ B,D–97, online versions (APHA 1997h). | Chloride | 40 CFR 143.4(b). |
| 4500-ClO ₂ C | 4500-ClO ₂ C–00, online version (APHA 2000d). | Chlorine dioxide | 40 CFR 141.74(a)(2). |
| 4500-ClO ₂ E | 4500-ClO ₂ E–00, online version (APHA 2000d). | Chlorine dioxide | 40 CFR 141.74(a)(2); 40 CFR 141.131(c)(1). |
| 4500-ClO ₂ E | 4500-ClO ₂ E–00, online version (APHA 2000d). | Chlorite | 40 CFR 141.131(b)(1). |
| 4500–CN ⁻ C,E,F,G | 4500–CN ⁻ C,E,F,G, 20th Edition (APHA 1998). | Cyanide | 40 CFR 141.23(k)(1). |
| 4500–F ⁻ B,C,D,E | 4500–F ⁻ B,C,D,E–97, online versions (APHA 1997i). | Fluoride | 40 CFR 141.23(k)(1). |

| Standard methods, 24th edition (APHA 2023) | Approved method | Contaminant | Regulation citations |
|--|---|---|--|
| 4500-H ⁺ B | 4500-H ⁺ B-00, online version (APHA 2000e). | pH | 40 CFR 141.23(k)(1). |
| 4500-NO ₃ ⁻ D | 4500-NO ₃ ⁻ D-00, online version (APHA 2000f). | Nitrate | 40 CFR 141.23(k)(1). |
| 4500-NO ₃ ⁻ E,F | 4500-NO ₃ ⁻ E,F-00, online versions (APHA 2000f). | Nitrate, nitrite | 40 CFR 141.23(k)(1). |
| 4500-NO ₂ ⁻ B | 4500-NO ₂ ⁻ B-00, online version (APHA 2000g). | Nitrite | 40 CFR 141.23(k)(1). |
| 4500-O ₃ B | 4500-O ₃ B-97, online version (APHA 1997j). | Ozone | 40 CFR 141.74(a)(2). |
| 4500-P E,F | 4500-P E,F, 19th Edition, (APHA 1995) | Ortho-phosphate | 40 CFR 141.23(k)(1). |
| 4500-SiO ₂ C,D,E | 4500-SiO ₂ C,D,E-97, online versions (APHA 1997k). | Silica | 40 CFR 141.23(k)(1). |
| 4500-SO ₄ ²⁻ C,D,E,F | 4500-SO ₄ ²⁻ C,D,E,F, 19th Edition (APHA 1995). | Sulfate | 40 CFR 143.4(b). |
| 5310 B,C | 5310 B,C-00, online versions (APHA 2000h). | Dissolved and Total Organic Carbon | 40 CFR 141.131(d). |
| 5540 C | 5540 C-00, online version (APHA 2000i) | Foaming agents | 40 CFR 143.4(b). |
| 5910 B | 5910 B-00, online version (APHA 2000j) | UV Absorption at 254 nm | 40 CFR 141.131(d). |
| 6251 B | 6251 B-94, online version (APHA 1994) | HAA5 | 40 CFR 141.131(b)(1). |
| 6610 B | EPA Method 531.2, Rev. 1.0 (USEPA 2001). | Carbofuran, oxamyl | 40 CFR 141.24(e)(1). |
| 6640 B | EPA Method 515.4, Rev. 1.0 (USEPA 2000). | 2,4-D; 2,4,5-TP; Dalapon; Dinoseb; Pentachlorophenol; Picloram. | 40 CFR 141.24(e)(1). |
| 6651 B | 6651 B, 20th Edition, (APHA 1998) | Glyphosate | 40 CFR 141.24(e)(1). |
| 7110 B | 7110 B-00, online version (APHA 2000k). | Gross alpha and gross beta | 40 CFR 141.25(a). |
| 7110 C | 7110 C-00, online version (APHA 2000k). | Gross alpha | 40 CFR 141.25(a). |
| 7110 D | EPA Method 900.0 (USEPA 1980) | Gross alpha and gross beta | 40 CFR 141.25(a). |
| 7120 | 7120-97, online version (APHA 1997l) | Gamma emitters (includes radioactive cesium and iodine). | 40 CFR 141.25(a). |
| 7500-Cs B | 7500-Cs B-00, online version (APHA 2000l). | Radioactive Cesium and Gamma emitters. | 40 CFR 141.25(a). |
| 7500- ³ H B | 7500- ³ H B-00, online version (APHA 2000m). | Tritium | 40 CFR 141.25(a). |
| 7500-I B | 7500-I B-00, online version (APHA 2000n). | Radioactive Iodine and Gamma emitters | 40 CFR 141.25(a). |
| 7500-I C,D | 7500-I C,D-00, online versions (APHA 2000n). | Radioactive Iodine | 40 CFR 141.25(a). |
| 7500-Ra B,C | 7500-Ra B,C-01, online versions (APHA 2001c). | Radium-226 | 40 CFR 141.25(a). |
| 7500-Ra D | 7500-Ra D-01, online version (APHA 2001c). | Radium-228 | 40 CFR 141.25(a). |
| 7500-Ra E | GA Method (2004) | Radium-226 and Radium-228 | 40 CFR 141.25(a). |
| 7500-Sr B | 7500-Sr B-01, online version (APHA 2001d). | Strontium-89 and Strontium-90 | 40 CFR 141.25(a). |
| 7500-U B,C | 7500-U B,C-00, online versions (APHA 2000o). | Uranium | 40 CFR 141.25(a). |
| 9221 A,C | 9221 A,C, 20th Edition, (APHA 1998) | Total coliforms | 40 CFR 141.74(a)(1). |
| 9221 B | 9221 B, 20th Edition, (APHA 1998) | Total coliforms | 40 CFR 141.74(a)(1) 40 CFR 141.852(a)(5) [B.1, B.2, B.3, B.4]. |
| 9221 D | 9221 D, 20th Edition, (APHA 1998) | Total coliforms | 40 CFR 141.852(a)(5) [D.1, D.2, D.3]. |
| 9221 E | 9221 E, 20th Edition, (APHA 1998) | Fecal coliforms | 40 CFR 141.74(a)(1). |
| 9221 F | 9221 F, 20th Edition, (APHA 1998) | <i>E. coli</i> | 40 CFR 141.402(c)(2) 40 CFR 141.852(a)(5) [F.1]. |
| 9222 A | 9222 A 20th Edition, (APHA 1998) | Total coliforms | 40 CFR 141.74(a)(1). |
| 9222 B,C | 9222 B,C, 20th Edition, (APHA 1998) | Total coliforms | 40 CFR 141.74(a)(1) 40 CFR 141.852(a)(5). |
| 9222 D | 9222 D, 20th Edition, (APHA 1998) | Fecal coliforms | 40 CFR 141.74(a)(1). |
| 9222 H | 9222 G, 20th Edition, (APHA 1998) | <i>E. coli</i> | 40 CFR 141.852(a)(5). |
| 9222 I | 9222 G, 20th Edition, (APHA 1998) | <i>E. coli</i> | 40 CFR 141.402(c)(2) 40 CFR 141.852(a)(5). |
| 9222 J | m-ColiBlue24 Test (Hach Company 1999). | Total coliforms | 40 CFR 141.852(a)(5). |
| 9222 J | m-ColiBlue24 Test (Hach Company 1999). | <i>E. coli</i> | 40 CFR 141.402(c)(2) 40 CFR 141.852(a)(5). |
| 9223 B | 9223 B, 20th Edition (APHA 1998) | Total coliforms | 40 CFR 141.74(a)(1); 40 CFR 141.852(a)(5). |

| Standard methods, 24th edition (APHA 2023) | Approved method | Contaminant | Regulation citations |
|--|--|----------------------|---|
| 9223 B | 9223 B, 20th Edition (APHA 1998) | <i>E. coli</i> | 40 CFR 141.402(c)(2); 40 CFR 141.852(a)(5). |
| 9230 B | 9230 C, 20th Edition (APHA 1998) | Enterococci | 40 CFR 141.402(c)(2). |
| 9230 C | 9230 C, 20th Edition (APHA 1998) | Enterococci | 40 CFR 141.402(c)(2). |
| 9230 D | (Budnick 1996) | Enterococci | 40 CFR 141.402(c)(2). |

The 24th edition can be obtained from the American Public Health Association (APHA), 800 I Street NW, Washington, DC 20001–3710. Approved online versions are available at <http://www.standardmethods.org>.

B. Methods Developed by Vendors

1. Hach Method 10312—Spectrophotometric Measurement of Fluoride in Finished Drinking Water Aluminum-Chromeazuro S complex (AL–CAS) Using Planar Reagent-filled Cuvettes (Hach 2022a). Hach Method 10312 uses a reagent solution containing an intensely colored aluminum-chromeazuro S complex. The presence of fluoride in the sample removes aluminum from the complex, releasing the free chromeazuro S ion. The free chromeazuro S ion has peak absorbance in a different region of the visible spectrum. The quantifiable change in absorbance is directly proportional to the fluoride concentration. Test results are measured at 427 nm using a colorimeter.

Approved methods for fluoride are listed at 40 CFR 141.23(k)(1). The performance characteristics of Hach Method 10312 were compared to the performance characteristics of the approved Standard Methods 4500–F D (Standard Methods 1997i). The validation study report (Hach 2022b) summarizes the results obtained from three different facilities and laboratories. Method detection limits and method limits, precision and accuracy performance in high and low ionic strength water, and matrix spike studies were determined at all sites.

EPA has determined that Hach Method 13012 is equally effective relative to Standard Methods 4500–F D. The basis for this determination is discussed in Adams 2023a. Therefore, EPA is approving the Hach Method 10312 for determining fluoride in drinking water. A copy of the method is available from Hach Company, 5600 Lindbergh Drive, Loveland, Colorado 80539.

2. Yokogawa Method 820—Measurement of Turbidity in Drinking Water by Right Angle Scattered Light Turbidity Analyzer (Yokogawa 2022a). Yokogawa Method 820 uses a right-

angle scattering turbidimeter with an LED light source with a peak emitting wavelength between 650 and 670 nm. The method is based upon a comparison of the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension.

Approved methods for turbidity are listed at 40 CFR 141.74(a)(1). The performance characteristics of the Yokogawa Method 820 were compared to the performance characteristics of the approved EPA Method 180.1 (USEPA 1993). The validation study report (Yokogawa 2022b) summarizes the results obtained from the turbidimeters tested at three different utilities. Method resolution, linearity, limits of detection, and precision and accuracy were determined at the first site, with subsequent sites evaluating precision and accuracy performance.

EPA has determined that the Yokogawa Method 820 is equally effective relative to EPA Method 180.1. The basis for this determination is discussed in Adams 2023b. Therefore, EPA is approving the Yokogawa Method 820 for determining turbidity in drinking water. A copy of the method is available from Yokogawa Electric Corporation, 2–9–32 Nakamachi, Musashino-shi, Tokyo, Japan 180–8750.

IV. Statutory and Executive Order Reviews

As noted in section II of this preamble, under the terms of SDWA section 1401(1), this streamlined method approval action is not a rule. Accordingly, the Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, does not apply because this action is not a rule for purposes of 5 U.S.C. 804(3). Similarly, this action is not subject to the Regulatory Flexibility Act because it is not subject to notice and comment requirements under the Administrative Procedure Act or any other statute. In addition, because this approval action is not a rule, but simply makes alternative testing methods available as options for monitoring under SDWA, EPA has concluded that other statutes and executive orders generally applicable to

rulemaking do not apply to this approval action.

V. References

- Adams, W. 2023a. Memo to the record describing basis for expedited approval of Hach Method 10312. May 9, 2023. (Available at <https://www.regulations.gov>; docket ID No. EPA–HQ–OW–2023–0541.)
- Adams, W. 2023b. Memo to the record describing basis for expedited approval of Yokogawa Method 820. May 9, 2023. (Available at <https://www.regulations.gov>; docket ID No. EPA–HQ–OW–2023–0541.)
- American Public Health Association (APHA). 1994. Standard Method 6251 B–94. Disinfection By-Products: Haloacetic Acids and Trichlorophenol. B. Micro Liquid-Liquid Extraction Gas Chromatographic Method. Approved by Standard Methods Committee 1994. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1995. *19th Edition of Standard Methods for the Examination of Water and Wastewater*. American Public Health Association, 800 I Street NW, Washington, DC 20001–3710.
- American Public Health Association (APHA). 1997a. Standard Method 2150 B–97. Odor. B. Threshold Odor Test. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1997b. Standard Method 2320 B–97. Alkalinity. B. Titration Method. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1997c. Standard Method 2510 B–97. Conductivity. B. Laboratory Method. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1997d. Standard Method 2540 C–97. Solids. C. Total Dissolved Solids Dried at 180 °C. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1997e. Standard Method 3114 B–97. Arsenic and Selenium by Hydride Generation/Atomic Emission Spectrometry. B. Manual Hydride Generation/Atomic Absorption

- Spectrometric Method. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1997f. Standard Method 3500-Ca B-97. Calcium. B. EDTA Titrimetric Method. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1997g. Standard Method 3500-Mg B-97. Magnesium. B. Calculation Method. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
- American Public Health Association (APHA). 1997h. Standard Methods 4500-Cl⁻ B, D-97. Chloride. B. Argentometric Method. D. Potentiometric Method. Approved by Standard Methods Committee 1997. Standard Methods Online (Available at <https://www.standardmethods.org>)
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List of Subjects in 40 CFR Part 141

Environmental protection, Chemicals, Indians—lands, Intergovernmental relations, Reporting and recordkeeping requirements, Water supply.

Jennifer L. McLain,

Director, Office of Ground Water and Drinking Water.

For the reasons stated in the preamble, the Environmental Protection Agency amends 40 CFR part 141 as follows:

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

■ 1. The authority citation for part 141 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

■ 2. Amend Appendix A to subpart C of part 141 by:

■ a. Revising the table entitled “Alternative Testing Methods for Contaminants Listed at 40 CFR 141.23(k)(1)”;

■ b. Revising the table entitled “Alternative Testing Methods for Contaminants Listed at 40 CFR 141.24(e)(1)”;

■ c. Revising the table entitled “Alternative Testing Methods for Contaminants Listed at 40 CFR 141.25(a)”;

■ d. Revising the table entitled “Alternative Testing Methods for Contaminants Listed at 40 CFR 141.74(a)(1)”;

■ e. Revising the table entitled “Alternative Testing Methods for Disinfectant Residuals Listed at 40 CFR 141.74(a)(2)”;

■ f. Revising the table entitled “Alternative Testing Methods for Contaminants Listed at 40 CFR 141.131(b)(1)”;

■ g. Revising the table entitled “Alternative Testing Methods for Disinfectant Residuals Listed at 40 CFR 141.131(c)(1)”;

■ h. Revising the table entitled “Alternative Testing Methods for Parameters Listed at 40 CFR 141.131(d)”;

■ i. Revising the table entitled “Alternative Testing Methods for Contaminants Listed at 40 CFR 141.402(c)(2)”;

■ j. Revising the table entitled “Alternative Testing Methods for Contaminants Listed at 40 CFR 141.852(a)(5)”;

■ k. Revising the table entitled “Alternative Testing Methods for

Contaminants Listed at 40 CFR 143.4(b)”;

The revisions and additions read as follows:

Appendix A to Subpart C of Part 141—Alternative Testing Methods Approved for Analyses Under the Safe Drinking Water Act

* * * * *

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.23(k)(1)

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition ²⁸ | SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|-------------|---|------------------------------------|------------------------------|-------------------------------|--|------------------------|-------------------------|-------|
| Alkalinity | Titrimetric | | 2320 B | 2320 B | 2320 B | | D1067–06 B, 11 B, 16 B. | |
| Antimony | Hydride—Atomic Absorption. | | | | | | D 3697–07, –12, –17. | |
| | Atomic Absorption; Furnace. Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ² . | 3113 B | 3113 B | 3113 B | 3113 B–04, B–10. | | |
| Arsenic | Atomic Absorption; Furnace. | | 3113 B | 3113 B | 3113 B | 3113 B–04, B–10. | D 2972–08 C, –15 C. | |
| | Hydride Atomic Absorption. Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ² . | 3114 B | 3114 B | 3114 B | 3114 B–09 | D 2972–08 B, –15 B. | |
| Barium | Inductively Coupled Plasma. | | 3120 B | 3120 B | 3120 B. | | | |
| | Atomic Absorption; Direct. | | 3111 D | 3111 D | 3111 D. | | | |
| | Atomic Absorption; Furnace. Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ² . | 3113 B | 3113 B | 3113 B | 3113 B–04, B–10. | | |
| Beryllium | Inductively Coupled Plasma. | | 3120 B | 3120 B | 3120 B. | | | |
| | Atomic Absorption; Furnace. Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ² . | 3113 B | 3113 B | 3113 B | 3113 B–04, B–10. | D 3645–08 B, –15 B. | |
| Cadmium | Atomic Absorption; Furnace. | | 3113 B | 3113 B | 3113 B | 3113 B–04, B–10. | | |
| | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ² . | | | | | | |
| Calcium | EDTA titrimetric | | 3500-Ca B | 3500-Ca B | 3500-Ca B | | D 511–09, –14 A. | |
| | Atomic Absorption; Direct Aspiration. | | 3111 B | 3111 B | 3111 B | | D 511–09, –14 B. | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.23(k)(1)—Continued

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition ²⁸ | SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|--------------------|---|------------------------------------|------------------------------|-------------------------------|--|------------------------|-------------------------|--|
| Chromium | Inductively Coupled Plasma. | ..... | 3120 B | 3120 B | 3120 B. | ..... | ..... | ..... |
| | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ². | ..... | ..... | ..... | ..... | D 6919-09, -17. | ..... |
| | Ion Chromatography. | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Copper | Inductively Coupled Plasma. | ..... | 3120 B | 3120 B | 3120 B. | ..... | ..... | ..... |
| | Atomic Absorption; Furnace. | ..... | 3113 B | 3113 B | 3113 B | 3113 B-04, B-10. | ..... | ..... |
| | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ². | ..... | ..... | ..... | ..... | ..... | ..... |
| | Atomic Absorption; Furnace. | ..... | 3113 B | 3113 B | 3113 B | 3113 B-04, B-10. | D 1688-07, -12 C, 17 C. | ..... |
| Conductivity | Atomic Absorption; Direct Aspiration. | ..... | 3111 B | 3111 B | 3111 B ..... | ..... | D 1688-07, -12 A, 17 A. | ..... |
| | Inductively Coupled Plasma. | ..... | 3120 B | 3120 B | 3120 B. | ..... | ..... | ..... |
| | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ². | ..... | ..... | ..... | ..... | ..... | ..... |
| | Colorimetry ..... | ..... | ..... | ..... | ..... | ..... | ..... | Hach Method 8026, ³⁵ Hach Method 10272. ³⁶ |
| Cyanide | Conductance ..... | ..... | 2510 B | 2510 B | 2510 B ..... | ..... | D 1125-14 A. | ..... |
| | Manual Distillation with MgCl ₂ followed by:. | ..... | 4500-CN-C | 4500-CN-C | 4500-CN-C | 4500-CN-C-99. | D 2036-06 A. | ..... |
| | Spectrophotometric, Amenable. | ..... | 4500-CN-G | 4500-CN-G | 4500-CN-G ..... | ..... | D 2036-06 B. | ..... |
| | Spectrophotometric Manual. | ..... | 4500-CN-E | 4500-CN-E | 4500-CN-E ..... | ..... | D2036-06 A. | ..... |
| | Selective Electrode. | ..... | 4500-CN-F | 4500-CN-F | 4500-CN-F. | ..... | ..... | ..... |
| | Gas Chromatography/Mass Spectrometry Headspace. | ..... | ..... | ..... | ..... | ..... | ..... | ME355.01.7 |
| Fluoride | Ion Chromatography. | ..... | 4110 B | 4110 B | 4110 B ..... | ..... | D 4327-11, -17. | ..... |
| | Manual Distillation; Colorimetric SPADNS. | ..... | 4500-F-B, D .. | 4500-F-B, D .. | 4500-F-B, D. | ..... | ..... | ..... |
| | Manual Electrode. | ..... | 4500-F-C | 4500-F-C | 4500-F-C ..... | ..... | D 1179-04, 10 B, 16 B. | ..... |
| | Automated Alizarin. | ..... | 4500-F-E | 4500-F-E | 4500-F-E. | ..... | ..... | ..... |
| | Arsenite-Free Colorimetric SPADNS. | ..... | ..... | ..... | ..... | ..... | ..... | Hach SPADNS 2 Method 10225, ²² Hach Method 10312. ⁶⁷ |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.23(k)(1)—Continued

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition ²⁸ | SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|-------------|---|------------------------------------|--|--|--|------------------------|--------------------|--|
| Lead | Atomic Absorption; Furnace. Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | 3113 B | 3113 B | 3113 B | 3113 B-04, B-10. | D 3559-08 D, 15 D. | Method 1001, Rev. 1.1. ⁵⁷ |
| | Differential Pulse Anodic Stripping Voltametry. | | | | | | | |
| Magnesium | Atomic Absorption. | | 3111 B | 3111 B | 3111 B | | D 511-09, -14 B. | |
| | Inductively Coupled Plasma. | | 3120 B | 3120 B | 3120 B. | | | |
| | Complexation Titrimetric Methods. | | 3500-Mg B | 3500-Mg B | 3500-Mg B | | D 511-09, -14 A. | |
| | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | | | | | | |
| Mercury | Ion Chromatography. | | | | | | D 6919-09, -17. | |
| | Manual, Cold Vapor. | | 3112 B | 3112 B | 3112 B | 3112 B-09 | D 3223-12, -17. | |
| Nickel | Inductively Coupled Plasma. | | 3120 B | 3120 B | 3120 B. | | | |
| | Atomic Absorption; Direct. | | 3111 B | 3111 B | 3111 B. | | | |
| | Atomic Absorption; Furnace. Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | 3113 B | 3113 B | 3113 B | 3113 B-04, B-10. | | |
| Nitrate | Ion Chromatography. | | 4110 B | 4110 B | 4110 B | | D 4327-11, -17. | Systea Easy (1-Reagent), ⁸ NECI Nitrate-Reductase. ⁴⁰ Hach TNTplus™ 835/836 Method 10206. ²³ |
| | Automated Cadmium Reduction. | | 4500-NO ₃ ⁻ F .. | 4500-NO ₃ ⁻ F .. | 4500-NO ₃ ⁻ F. | | | |
| | Manual Cadmium Reduction. | | 4500-NO ₃ ⁻ E | 4500-NO ₃ ⁻ E | 4500-NO ₃ ⁻ E. | | | |
| | Ion Selective Electrode. | | 4500-NO ₃ ⁻ D | 4500-NO ₃ ⁻ D | 4500-NO ₃ ⁻ D. | | | |
| | Reduction/Colorimetric. | | | | | | | |
| | Colorimetric; Direct. | | | | | | | |
| Nitrite | Capillary Ion Electrophoresis. | | | | | | D 6508-15. | |
| | Ion Chromatography. | | 4110 B | 4110 B | 4110 B | | D 4327-11, -17. | |
| | Automated Cadmium Reduction. | | 4500-NO ₃ ⁻ F .. | 4500-NO ₃ ⁻ F .. | 4500-NO ₃ ⁻ F. | | | |
| | Manual Cadmium Reduction. | | 4500-NO ₃ ⁻ E .. | 4500-NO ₃ ⁻ E .. | 4500-NO ₃ ⁻ E. | | | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.23(k)(1)—Continued

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition ²⁸ | SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|--------------------|---|------------------------------------|--|--|--|------------------------|--|---|
| Ortho-phosphate .. | Spectrophotometric. Reduction/Colorimetric. | | 4500-NO ₂ ⁻ B .. | 4500-NO ₂ ⁻ B .. | 4500-NO ₂ ⁻ B. | | | Systea Easy (1-Reagent), ⁸ NECi Nitrate-Reductase. ⁴⁰ |
| | Capillary Ion Electrophoresis. | ..... | ..... | ..... | ..... | ..... | D 6508-15. | |
| | Ion Chromatography. | ..... | 4110 B | 4110 B | 4110 B ..... | ..... | D 4327-11, -17. | |
| | Colorimetric, ascorbic acid, single reagent. | ..... | 4500-P E | 4500-P E | 4500-P E | 4500-P E-99. | ..... |  |
| pH | Colorimetric, Automated, Ascorbic Acid. | | 4500-P F | 4500-P F | 4500-P F | 4500-P F-99 .. | Thermo Fisher Discrete Analyzer. ⁴¹ | D 6508-15. |
| | Capillary Ion Electrophoresis. | ..... | ..... | ..... | ..... | ..... | D 6508-15. | |
| Selenium | Electrometric ... | ⁴⁸ 150.3 | 4500-H ⁺ B | 4500-H ⁺ B | 4500-H ⁺ B | | D 1293-12, -18. | D 3859-08 A, -15 A. D 3859-08 B, -15 B. |
| Silica | Hydride-Atomic Absorption. | ..... | 3114 B | 3114 B | 3114 B | 3114 B-09 ..... | ..... |  |
| | Atomic Absorption; Furnace. | ..... | 3113 B | 3113 B | 3113 B | 3113 B-04, B-10. | ..... |  |
| Silica | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | | | | | | D859-05, 10, 16. |
| | Colorimetric ..... | ..... | ..... | ..... | ..... | ..... | ..... |  |
| Sodium | Molybdosilicate Heteropoly blue Automated for Molybdate-reactive Silica. | | 4500-SiO ₂ C | 4500-SiO ₂ C | 4500-SiO ₂ C. | | | |
| | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | 4500-SiO ₂ D | 4500-SiO ₂ D | 4500-SiO ₂ D. | ..... | ..... |  |
| Sodium | Inductively Coupled Plasma. | | 3120 B | 3120 B | 3120 B. | | | |
| | Atomic Absorption; Direct Aspiration. | ..... | 3111 B | 3111 B | 3111 B. | ..... | ..... |  |
| Temperature | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | | | | | | D 6919-09, -17. |
| | Ion Chromatography. | ..... | ..... | ..... | ..... | ..... | ..... |  |
| Temperature | Thermometric .. | | 2550 | 2550 | 2550 | 2550-10. | | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.24(e)(1)

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|-------------------------|--|--|------------------------------|---|------------------------|-------------------|-------|
| Benzene | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Carbon tetra-chloride. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Chlorobenzene | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,2-Dichlorobenzene. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,4-Dichlorobenzene. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,2-Dichloroethane | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| cis-Dichloroethylene. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| trans-Dichloroethylene. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Dichloromethane ... | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,2-Dichloropropane. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Ethylbenzene | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Styrene | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Tetrachloroethylen-e. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,1,1-Trichloro-ethane. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Trichloroethylene .. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Toluene | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,2,4-Trichlorobenzene. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,1-Dichloroethylene. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 1,1,2-Trichlorethane. | Purge &Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.24(e)(1)—Continued

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|-----------------------|---|--|------------------------------|---|------------------------|-------------------|-----------------------|
| Vinyl chloride | Purge & Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| Xylenes (total) | Purge & Trap/Gas Chroma-tography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |
| 2,4-D | Gas Chroma-tography/Elec-tron Capture Detection (GC/ECD). | ..... | 6640 B | 6640 B | 6640 B-01, B-06 | D 5317-20. | |
| 2,4,5-TP (Silvex) ... | Gas Chroma-tography/Elec-tron Capture Detection (GC/ECD). | ..... | 6640 B | 6640 B | 6640 B-01, B-06 | D 5317-20. | |
| Alachlor | Solid Phase Ex-traction/Gas Chroma-tography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Atrazine | Liquid Chroma-tography Electro-spray Ionization Tan-dem Mass Spectrometry (LC/ESI-MS/MS). | 536. ²⁵ | | | | | |
| | Solid Phase Ex-traction/Gas Chroma-tography/Mass Spectrometry (GC/MS). | 525.3, ²⁴ 523. ²⁶ | | | | | |
| Benzo(a)pyrene | Solid Phase Ex-traction/Gas Chroma-tography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Carbofuran | High-performance liquid chroma-tography (HPLC) with post-column derivatization and fluores-cence detection. | ..... | 6610 B | 6610 B | 6610 B-04. | | |
| | Liquid Chroma-tography/Mass Spectrometry. | ..... | ..... | ..... | ..... | ..... | ME 531. ⁵⁸ |
| Chlordane | Solid Phase Ex-traction/Gas Chroma-tography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Dalapon | Ion Chroma-tography Electro-spray Ionization Tan-dem Mass Spectrometry (IC-ESI-MS/MS). | 557. ¹⁴ | | | | | |
| | Gas Chroma-tography/Elec-tron Capture Detection (GC/ECD). | ..... | 6640 B | 6640 B | 6640 B-01, B-06. | | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.24(e)(1)—Continued

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|------------------------------|---|----------------------|------------------------------|---|------------------------|-------------------|-------|
| Di(2-ethylhexyl)adipate. | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Di(2-ethylhexyl)phthalate. | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Dibromochloropropane (DBCP). | Purge & Trap/Gas Chromatography/Mass Spectrometry. | 524.3. ⁹ | | | | | |
| Dinoseb | Gas Chromatography/Electron Capture Detection (GC/ECD). | ..... | 6640 B | 6640 B | 6640 B-01, B-06. | | |
| Endrin | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Ethyl dibromide (EDB). | Purge & Trap/Gas Chromatography/Mass Spectrometry. | 524.3. ⁹ | | | | | |
| Glyphosate | High-Performance Liquid Chromatography (HPLC) with Post-Column Derivatization and Fluorescence Detection. | ..... | 6651 B | 6651 B | 6651 B-00, B-05. | | |
| Heptachlor | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Heptachlor Epoxide. | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Hexachlorobenzene. | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Hexachlorocyclopentadiene. | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Lindane | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Methoxychlor | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.24(e)(1)—Continued

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | SM online ³ | ASTM ⁴ | Other |
|--|---|--|------------------------------|---|------------------------|-----------------------|-------|
| Oxamyl | High-performance liquid chromatography (HPLC) with post-column derivatization and fluorescence detection. | | 6610 B | 6610 B | 6610 B-04. | | |
| Liquid Chromatography/Mass Spectrometry. PCBs (as Aroclors) | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | ME 531. ⁵⁸ | |
| Pentachlorophenol | Gas Chromatography/Electron Capture Detection (GC/ECD). | | 6640 B | 6640 B | 6640 B-01, B-06 | D 5317-20. | |
| Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). Picloram | Gas Chromatography/Electron Capture Detection (GC/ECD). | | 6640 B | 6640 B | 6640 B-01, B-06 | D 5317-20. | |
| Simazine | Liquid Chromatography Electrospray Ionization Tandem Mass Spectrometry (LC/ESI-MS/MS). | 536. ²⁵ | | | | | |
| Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). Toxaphene | Solid Phase Extraction/Gas Chromatography/Mass Spectrometry (GC/MS). | 525.3. ²⁴ | | | | | |
| Total Trihalomethanes. | Purge & Trap/Gas Chromatography/Mass Spectrometry. | 524.3, ⁹ 524.4. ²⁹ | | | | | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.25(a)

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | ASTM ⁴ | SM online ³ |
|--|-----------------------------------|-------------------------------|------------------------------|---|----------------------------|------------------------|
| Naturally Occurring: Gross alpha and beta. | Evaporation | 900.0, Rev. 1.0 ⁵⁰ | 7110 B | 7110 B. | | |
| Gross alpha | Liquid Scintillation | | | 7110 D | D 7283-17 | 7110 D-17. |
| Radium 226 | Coprecipitation | | 7110 C | 7110 C. | | |
| | Radon emanation | 903.1, Rev. 1.0 ⁵³ | 7500-Ra C | 7500-Ra C | D 3454-05, -18, D 3454-21. | |
| | Radiochemical Gamma Spectrometry. | 903.0, Rev. 1.0 ⁵⁴ | 7500-Ra B | 7500-Ra B | D 2460-07. | 7500-Ra E-07. |
| Radium 228 | Radiochemical Gamma Spectrometry. | 904.0, Rev. 1.0 ⁶² | 7500-Ra D | 7500-Ra D. | | 7500-Ra E-07. |
| Uranium | Radiochemical ICP-MS | | 7500-U B | 7500-U B. | | |
| | | | 3125 | | D 5673-05, 10, 16. | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.25(a)—Continued

| Contaminant | Methodology | EPA method | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | ASTM ⁴ | SM online ³ |
|--|---|------------|----------------------------------|---|--------------------------------|------------------------|
| Man-Made: Radioactive Ce- sium. | Alpha spectrometry .. Laser Phosphorimetry. Alpha Liquid Scin- tillation Spectrom- etry. | ..... | 7500-U C | 7500-U C | D 3972-09. D 5174-07. | |
| | Radiochemical ..... | ..... | 7500-Cs B | 7500-Cs B. | D 6239-09. | |
| | Gamma Ray Spec- trometry. | ..... | 7120 | 7120 | D 3649-06. | |
| | Radioactive Iodine Radiochemical ..... | ..... | 7500-I B, 7500-I C, 7500-I D. | 7500-I B, 7500-I C, 7500-I D. | D 3649-06. | |
| | Gamma Ray Spec- trometry. | ..... | 7120 | 7120 | D 4785-08, -20. | |
| | Radioactive Stron- tium 89, 90. Radiochemical ..... | ..... | 7500-Sr B | 7500-Sr B. | | |
| Tritium | Liquid Scintillation .... | ..... | 7500- ³ H B | 7500- ³ H B | D 4107-08, -20. | |
| Gamma Emitters Gamma Ray Spec- trometry. | ..... | ..... | 7120, 7500-Cs B, 7500-I B. | 7120, 7500-Cs B, 7500-I B. | D 3649-06, D 4785- 08, -20. | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.74(a)(1)

| Organism | Methodology | SM 21st edition ¹ | SM 22nd edition ²⁸ | SM 23rd edition ⁴⁹ | SM 24th edition ⁶⁶ | SM online ³ | Other |
|------------------------------|---|------------------------------|----------------------------------|-------------------------------|-------------------------------|------------------------|--|
| Total Coliform | Total Coliform Fermentation Technique. | 9221 A, B, C | 9221 A, B, C | 9221 A, B, C | 9221 A, B, C | 9221 A, B, C-06. | |
| | Total Coliform Membrane Filter Technique. | 9222 A, B, C ..... | ..... | 9222 A, B, C | 9222 A, B, C. | | |
| Fecal Coliforms | ONPG-MUG Test | 9223 | 9223 B | 9223 B | 9223 B | 9223 B-04. | |
| | Fecal Coliform Procedure. | 9221 E | 9221 E | 9221 E | 9221 E | 9221 E-06. | |
| | Fecal Coliform Fil- ter Procedure. | 9222 D | 9222 D | 9222 D | 9222 D | 9222 D-06. | |
| Heterotrophic bac- teria. | Pour Plate Meth- od. | 9215 B | 9215 B | 9215 B ..... | ..... | 9215 B-04. | |
| Turbidity | Nephelometric Method. | 2130 B | 2130 B | 2130 B | 2130 B ..... | ..... | Hach Method 8195, Rev. 3.0. ⁵² |
| | Laser Nephelometry (on-line). | ..... | ..... | ..... | ..... | ..... | Mitchell M5271, ¹⁰ Mitchell M5331, Rev. 1.2, ⁴² Lovibond PTV 6000. ⁴⁶ |
| | LED Nephelometry (on-line). | ..... | ..... | ..... | ..... | ..... | Mitchell M5331, ¹¹ Mitchell M5331, Rev. 1.2, ⁴² Lovibond PTV 2000, ⁴⁵ Yokogawa 820. ⁶⁸ |
| | LED Nephelometry (on-line). | ..... | ..... | ..... | ..... | ..... | AMI Turbiwell, ¹⁵ Lovibond PTV 1000. ⁴⁴ |
| | LED Nephelometry (portable). | ..... | ..... | ..... | ..... | ..... | Orion AQ4500, ¹² Lovibond TB 3500, ⁶⁴ Lovibond TB 5000. ⁶⁵ |
| | Laser Nephelometry (portable). | ..... | ..... | ..... | ..... | ..... | Lovibond TB 6000. ⁶³ |
| | 360° Nephelometry. | ..... | ..... | ..... | ..... | ..... | Hach Method 10258, Rev. 1.0, ³⁹ Hach Method 10258, Rev. 2.0. ⁵¹ |

ALTERNATIVE TESTING METHODS FOR DISINFECTANT RESIDUALS LISTED AT 40 CFR 141.74(a)(2)

| Residual | Methodology | EPA methods | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th edition ⁶⁶ | ASTM ⁴ | Other |
|------------------------|---|--------------------------|-------------------------------|---|-------------------|--|
| Free Chlorine | Amperometric Titration. | | 4500-CI D | 4500-CI D | D 1253–08, –14. | Hach Method 10260. ³¹ Hach Method 10241. ³⁴ ChloroSense, ¹⁷ ChloroSense, Rev. 1.1. ⁵⁹ |
| | DPD Ferrous Titrimetric. | ..... | 4500-CI F | 4500-CI F. | | |
| | DPD Colorimetric ..... | ..... | 4500-CI G | 4500-CI G | | |
| | Indophenol Colorimetric. | ..... | ..... | ..... |  |  |
| | Syringaldazine (FACTS). On-line Chlorine Analyzer. | EPA 334.0. ¹⁶ | 4500-CI H | 4500-CI H. | | |
| | Amperometric Sensor. | ..... | ..... | ..... |  |  |
| Total Chlorine | Amperometric Titration. | | 4500-CI D | 4500-CI D | D 1253–08, –14. | Hach Method 10260. ³¹ ChloroSense, ¹⁷ ChloroSense, Rev. 1.1. ⁵⁹ |
| | Amperometric Titration (Low level measurement). | ..... | 4500-CI E | 4500-CI E. | | |
| | DPD Ferrous Titrimetric. | ..... | 4500-CI F | 4500-CI F. | | |
| | DPD Colorimetric ..... | ..... | 4500-CI G | 4500-CI G | | |
| | Indophenol Colorimetric. | 127. ⁵⁵ | ..... | ..... |  |  |
| | Iodometric Electrode On-line Chlorine Analyzer. | EPA 334.0. ¹⁶ | 4500-CI I | 4500-CI I. | | |
| Chlorine Dioxide | Amperometric Titration. | | 4500–ClO ₂ C | 4500–ClO ₂ C. | | ChloroSense, ¹⁷ ChloroSense, Rev. 1.1. ⁵⁹ ChlordioX Plus, ³² ChlordioX Plus, Rev. 1.1. ⁶⁰ |
| | Amperometric Titration. | ..... | 4500–ClO ₂ E | 4500–ClO ₂ E. | | |
| | Amperometric Sensor. | ..... | ..... | ..... |  |  |
| Ozone | Indigo Method | | 4500–O ₃ B | 4500–O ₃ B. | | |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.131(b)(1)

| Contaminant | Methodology | EPA method | ASTM ⁴ | SM online ³ | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th Edition ⁶⁶ | Other |
|---------------|--|--|-------------------|------------------------|------------------------------|---|------------------------------------|
| TTHM | P&T/GC/MS | 524.3, ⁹ 524.4. ²⁹ | ..... | ..... | ..... | ..... | ..... |
| HAA5 | LLE (diazomethane)/GC/ECD. | ..... | ..... | 6251 B–07 | 6251 B | 6251 B. | ..... |
| ..... | Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC–ESI–MS/MS). | 557. ¹⁴ | ..... | ..... | ..... | ..... | ..... |
| ..... | Two-Dimensional Ion Chromatography (IC) with Suppressed Conductivity Detection. | ..... | ..... | ..... | ..... | ..... | Thermo Fisher 557.1. ⁴⁷ |
| Bromate | Two-Dimensional Ion Chromatography (IC). | 302.0 ¹⁸ | ..... | ..... | ..... | ..... | ..... |
| ..... | Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC–ESI–MS/MS). | 557. ¹⁴ | ..... | ..... | ..... | ..... | ..... |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.131(b)(1)—Continued

| Contaminant | Methodology | EPA method | ASTM ⁴ | SM online ³ | SM 21st edition ¹ | SM 22nd edition, ²⁸ SM 23rd edition, ⁴⁹ SM 24th Edition ⁶⁶ | Other |
|--|---|------------|-------------------|------------------------|------------------------------|---|---|
| Chlorite | Chemically Suppressed Ion Chromatography. | ..... | D 6581–08 A. | | | | |
| | Electrolytically Suppressed Ion Chromatography. | ..... | D 6581–08 B. | | | | |
| | Chemically Suppressed Ion Chromatography. | ..... | D 6581–08 A. | | | | |
| | Electrolytically Suppressed Ion Chromatography. | ..... | D 6581–08 B. | | | | |
| Chlorite—daily monitoring as prescribed in 40 CFR 141.132(b)(2)(i)(A). | Amperometric Titration. | ..... | ..... | ..... | 4500-ClO ₂ E | 4500-ClO ₂ E. | |
| | Amperometric Sensor. | ..... | ..... | ..... | ..... | ..... | ChlordioX Plus, ³² ChlordioX Plus, Rev. 1.1. ⁶⁰ |

ALTERNATIVE TESTING METHODS FOR DISINFECTANT RESIDUALS LISTED AT 40 CFR 141.131(c)(1)

| | | | | | | | |
|-------------------|--|-------------------------|--------------------------|--------------------------|------------------|--|--|
| Free Chlorine | Amperometric Titration ... | 4500-Cl D | 4500-Cl D | 4500-Cl D | D 1253–08, –14. | | |
| | DPD Ferrous Titrimetric .. | 4500-Cl F | 4500-Cl F | 4500-Cl F | | | Hach Method 10260. ³¹ |
| | DPD Colorimetric | 4500-Cl G | 4500-Cl G | 4500-Cl G | | | Hach Method 10241. ³⁴ |
| | Indophenol Colorimetric | ..... | ..... | ..... |  |  |  |
| | Syringaldazine (FACTS) Amperometric Sensor | 4500-Cl H | 4500-Cl H | 4500-Cl H | | | ChloroSense, ¹⁷ ChloroSense, Rev. 1.1. ⁵⁹ EPA 334.0. ¹⁶ |
| Combined Chlorine | On-line Chlorine Analyzer | ..... | ..... | ..... |  |  |  |
| | Amperometric Titration ... | 4500-Cl D | 4500-Cl D | 4500-Cl D | D 1253–08, –14.. | | |
| Total Chlorine | DPD Ferrous Titrimetric .. | 4500-Cl F | 4500-Cl F | 4500-Cl F | | | Hach Method 10260. ³¹ |
| | DPD Colorimetric | 4500-Cl G | 4500-Cl G | 4500-Cl G | | | |
| | Amperometric Titration ... | 4500-Cl D | 4500-Cl D | 4500-Cl D | D 1253–08, –14. | | |
| | ≤Low level Amperometric Titration. | 4500-Cl E | 4500-Cl E | 4500-Cl E | | | |
| | DPD Ferrous Titrimetric .. | 4500-Cl F | 4500-Cl F | 4500-Cl F | | | Hach Method 10260. ³¹ |
| Chlorine Dioxide | DPD Colorimetric | 4500-Cl G | 4500-Cl G | 4500-Cl G | | | Hach Method 10260. ³¹ |
| | Iodometric Electrode | 4500-Cl I | 4500-Cl I | 4500-Cl I | | | ChloroSense, ¹⁷ ChloroSense, Rev. 1.1. ⁵⁹ EPA 334.0. ¹⁶ |
| | Amperometric Sensor | ..... | ..... | ..... |  |  |  |
| | On-line Chlorine Analyzer | ..... | ..... | ..... |  |  |  |
| | Amperometric Method II Amperometric Sensor | 4500-ClO ₂ E | 4500-ClO ₂ E. | 4500-ClO ₂ E. | | | ChlordioX Plus, ³² ChlordioX Plus, Rev. 1.1. ⁶⁰ |

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ALTERNATIVE TESTING METHODS FOR PARAMETERS LISTED AT 40 CFR 141.131(d)

| | | | | | | | |
|---|--|--------|--------|--------|-------|--------------------------------|-----------------------------------|
| Total Organic Carbon (TOC). | High Temperature Combustion. | 5310 B | 5310 B | 5310 B | | 415.3, Rev 1.2 ¹⁹ . | |
| | Persulfate-Ultraviolet or Heated Persulfate Oxidation. | 5310 C | 5310 C | 5310 C | ..... | 415.3, Rev 1.2 ¹⁹ | Hach Method 10267 ³⁸ . |
| | Wet Oxidation Ozone Oxidation | 5310 D | 5310 D | ..... | ..... | 415.3, Rev 1.2 ¹⁹ . | Hach Method 10261 ³⁷ . |
| Specific Ultraviolet Absorbance (SUVA). | Calculation using DOC and UV ₂₅₄ data. | ..... | ..... | ..... | ..... | 415.3, Rev 1.2 ¹⁹ . | |
| Dissolved Organic Carbon (DOC). | High Temperature Combustion. | 5310 B | 5310 B | 5310 B | ..... | 415.3, Rev 1.2 ¹⁹ . | |

ALTERNATIVE TESTING METHODS FOR PARAMETERS LISTED AT 40 CFR 141.131(d)—Continued

| | | | | | | | |
|--|--|--------------|--------------|--------------|-----------------|--------------------------------|--|
| Ultraviolet absorption at 254 nm (UV ₂₅₄). | Persulfate-Ultraviolet or Heated Persulfate Oxidation. | 5310 C | 5310 C | 5310 C ..... | ..... | 415.3, Rev 1.2 ¹⁹ . | |
| | Wet Oxidation | 5310 D | 5310 D | | | 415.3, Rev 1.2 ¹⁹ . | |
| | Spectrophotometry. | 5910 B | 5910 B | 5910 B | 5910 B-11 | 415.3, Rev 1.2 ¹⁹ | |

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ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.402(c)(2)

| | | | | | | | |
|----------------------|--|--------------|--------------|--------------|------------------|---------------------------|--|
| <i>E. coli</i> | Colilert | | 9223 B | 9223 B | 9223 B | 9223 B-97, B-04. | ReadyCult®. ²⁰ Modified Colitag™ ¹³ , Modified Colitag™, Version 2.0. ⁶¹ Chromocult®. ²¹ |
| | Colisure ..... | ..... | 9223 B | 9223 B | 9223 B | 9223 B-97, B-04. | |
| Colilert-18 | 9223 B | 9223 B | 9223 B | 9223 B | 9223 B-97, B-04. | | |
| ReadyCult® ..... | ..... | ..... | ..... | ..... | ..... |  |  |
| Colitag ..... | ..... | ..... | ..... | ..... | ..... |  |  |
| Enterococci | Chromocult® ..... | ..... | ..... | ..... | ..... | ..... |  |
| | EC-MUG ..... | ..... | ..... | 9221 F | 9221 F | 9221 F-06. | |
| | NA-MUG ..... | ..... | ..... | ..... | 9222 I. | ..... |  |
| | mColiBlue24 Test | ..... | ..... | ..... | 9222 J. | ..... |  |
| | Tecta EC/TC ^{33,43} , RAPID'E.coli 2 ⁵⁶. | ..... | ..... | ..... | ..... | ..... |  |
| | Multiple-Tube Technique. | ..... | ..... | ..... | 9230 B | 9230 B-04. | |
| Coliphage | Membrane Filter Techniques. | ..... | ..... | ..... | 9230 C. | ..... |  |
| | Fluorogenic Substrate Enterococcus Test (using Enterolert). | | | | 9230 D. | | |
| | Two-Step Enrichment Presence-Absence Procedure. | | | | | Fast Phage. ³⁰ | |

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ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.852(a)(5)

| | | | | | | | |
|------------------------------|---|--|--------------|---------------------|--------------------------|-------------------|-------|
| Total Coliforms | Lactose Fermentation Methods. | Standard Total Coliform Fermentation Technique. | ..... | 9221 B.1, B.2 | 9221 B.1, B.2, B.3, B.4. | 9221 B.1, B.2-06. | |
| | | Presence-Absence (P-A) Coliform Test. | ..... | ..... | 9221 D.1, D.2, D.3. | ..... |  |
| | Membrane Filtration Methods. | Standard Total Coliform Membrane Filter Procedure using Endo Media. | | | | 9222 B, C. | |
| | | Simultaneous Detection of Total Coliforms and <i>E. coli</i> by Dual Chromogen Membrane Filter Procedure (using mColiBlue24 medium). | | | | 9222 J. | |
| Enzyme Substrate Methods. | Simultaneous Detection of Total Coliform Bacteria and <i>Escherichia coli</i> Using RAPID'E.coli (REC2) in Drinking Water ⁵⁶. | ..... | ..... | ..... | ..... | ..... |  |
| | Colilert® ..... | ..... | ..... | 9223 B | 9223 B | 9223 B-04. | |
| | Colisure® ..... | ..... | ..... | 9223 B | 9223 B | 9223 B-04. | |
| | | Colilert-18 | 9223 B | 9223 B | 9223 B | 9223 B-04. | |
| | | Tecta EC/TC ^{33,43}. | ..... | ..... | ..... | ..... |  |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 141.852(a)(5)—Continued

| | | | | | | |
|-------------------------------|---|--|--------------|----------------|--------------------|--------------|
| <i>Escherichia coli</i> | <i>Escherichia coli</i> Procedure (following Lactose Fermentation Methods). <i>Escherichia coli</i> Partitioning Methods (following Membrane Filtration Methods). Simultaneous Detection of Total Coliforms and <i>E. coli</i> by Dual Chromogen Membrane Filter Procedure. Membrane Filtration Method. Enzyme Substrate Methods. | Modified Colitag™, Version 2.0 ⁶¹ . EC–MUG medium .... | ..... | 9221 F.1 | 9221 F.1 | 9221 F.1–06. |
| | | EC broth with MUG (EC–MUG). | ..... | ..... | 9222 H. | |
| | | NA–MUG medium mColiBlue24 medium | ..... | ..... | 9222 I. 9222 J. | |
| | | Simultaneous Detection of Total Coliform Bacteria and <i>Escherichia coli</i> Using RAPID [®] <i>E. coli</i> (REC2) in Drinking Water ⁵⁶. | ..... | 9223 B | 9223 B | 9223 B–04. |
| | | Colilert [®] | 9223 B | 9223 B | 9223 B | 9223 B–04. |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 143.4(b)

| Contaminant | Methodology | EPA method | ASTM ⁴ | SM 21 st edition ¹ | SM 22 nd edition, ²⁸ SM 23 rd edition, ⁴⁹ SM 24 th edition ⁶⁶ | SM online ³ |
|----------------------|---|------------------------------------|-----------------------|--|---|------------------------|
| Aluminum | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ². | ..... | ..... | ..... | ..... |
| | Atomic Absorption; Direct. | ..... | ..... | 3111 D | 3111 D. | ..... |
| | Atomic Absorption; Furnace. | ..... | ..... | 3113 B | 3113 B | 3113 B–04, B–10. |
| Chloride | Inductively Coupled Plasma. | ..... | ..... | 3120 B | 3120 B. | ..... |
| | Silver Nitrate Titration. | ..... | D 512–04 B, 12 B | 4500-C\| minus:B | 4500-C\| minus:B. | ..... |
| Color | Ion Chromatography Potentiometric Titration. | ..... | D 4327–11, –17 | 4110 B | 4110 B. | ..... |
|  | ..... | ..... | ..... | 4500-C\| minus:D | 4500-C\| minus:D. | ..... |
| Foaming Agents | Visual Comparison ... | ..... | ..... | 2120 B | 2120 B. | ..... |
| | Methylene Blue Active Substances (MBAS). | ..... | ..... | 5540 C | 5540 C. | ..... |
| Iron | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ². | ..... | ..... | ..... | ..... |
| | Atomic Absorption; Direct. | ..... | ..... | 3111 B | 3111 B. | ..... |
| | Atomic Absorption; Furnace. | ..... | ..... | 3113 B | 3113 B | 3113 B–04, B–10 |
| Manganese | Inductively Coupled Plasma. | ..... | ..... | 3120 B | 3120 B. | ..... |
| | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP–AES). | 200.5, Revision 4.2 ². | ..... | ..... | ..... | ..... |
| | Atomic Absorption; Direct. | ..... | ..... | 3111 B | 3111 B. | ..... |
| ..... | Atomic Absorption; Furnace. | ..... | ..... | 3113 B | 3113 B | 3113 B–04, B–10. |
| | Inductively Coupled Plasma. | ..... | ..... | 3120 B | 3120 B. | ..... |

ALTERNATIVE TESTING METHODS FOR CONTAMINANTS LISTED AT 40 CFR 143.4(b)—Continued

| Contaminant | Methodology | EPA method | ASTM ⁴ | SM 21 st edition ¹ | SM 22 nd edition, ²⁸ SM 23 rd edition, ⁴⁹ SM 24 th edition ⁶⁶ | SM online ³ |
|------------------------|---|------------------------------------|-------------------|--|---|---------------------------------------|
| Odor | Threshold Odor Test | | | 2150 B | 2150 B. | |
| Silver | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | | | | |
| | Atomic Absorption; Direct. | | | 3111 B | 3111 B. | |
| | Atomic Absorption; Furnace. | | | 3113 B | 3113 B | 3113 B-04, B-10. |
| | Inductively Coupled Plasma. | | | 3120 B | 3120 B. | |
| Sulfate | Ion Chromatography | | D 4327-11, -17 | 4110 B | 4110 B. | |
| | Gravimetric with ignition of residue. | | | 4500-SO ₄ 2 minus;C. | 4500-SO ₄ 2 minus;C. | 4500-SO ₄ 2 minus;C-97. |
| | Gravimetric with drying of residue. | | | 4500-SO ₄ 2 minus;D. | 4500-SO ₄ 2 minus;D. | 4500-SO ₄ 2 minus;D-97. |
| | Turbidimetric method | | D 516-07, 11, 16 | 4500-SO ₄ 2 minus;E. | 4500-SO ₄ 2 minus;E. | 4500-SO ₄ 2 minus;E-97. |
| | Automated methylthymol blue method. | | | 4500-SO ₄ 2 minus;F. | 4500-SO ₄ 2 minus;F. | 4500-SO ₄ 2 minus;F-97. |
| Total Dissolved Solids | Total Dissolved Solids Dried at 180 deg C. | | | 2540 C | 2540 C. | |
| Zinc | Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES). | 200.5, Revision 4.2 ² . | | | | |
| | Atomic Absorption; Direct Aspiration. | | | 3111 B | 3111 B. | |
| | Inductively Coupled Plasma. | | | 3120 B | 3120 B. | |

¹ Standard Methods for the Examination of Water and Wastewater, 21st edition (2005). Available from American Public Health Association, 800 I Street NW, Washington, DC 20001-3710.

² EPA Method 200.5, Revision 4.2. "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry." 2003. EPA/600/R-06/115. (Available at <http://www.epa.gov/water-research/epa-drinking-water-research-methods>.)

³ Standard Methods Online are available at <http://www.standardmethods.org>. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

⁴ Available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or <http://astm.org>. The methods listed are the only alternative versions that may be used.

⁶ Standard Methods for the Examination of Water and Wastewater, 20th edition (1998). Available from American Public Health Association, 800 I Street NW, Washington, DC 20001-3710.

⁷ Method ME355.01, Revision 1.0. "Determination of Cyanide in Drinking Water by GC/MS Headspace," May 26, 2009. Available at <https://www.nemi.gov> or from James Eaton, H & E Testing Laboratory, 221 State Street, Augusta, ME 04333. (207) 287-2727.

⁸ Systea Easy (1-Reagent). "Systea Easy (1-Reagent) Nitrate Method," February 4, 2009. Available at <https://www.nemi.gov> or from Systea Scientific, LLC., 900 Jorie Blvd., Suite 35, Oak Brook, IL 60523.

⁹ EPA Method 524.3, Version 1.0. "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry," June 2009. EPA 815-B-09-009. Available at <https://www.nemi.gov>.

¹⁰ Mitchell Method M5271, Revision 1.1. "Determination of Turbidity by Laser Nephelometry," March 5, 2009. Available at <https://www.nemi.gov> or from Leck Mitchell, Ph.D., PE, 656 Independence Valley Dr., Grand Junction, CO 81507.

¹¹ Mitchell Method M5331, Revision 1.1. "Determination of Turbidity by LED Nephelometry," March 5, 2009. Available at <https://www.nemi.gov> or from Leck Mitchell, Ph.D., PE, 656 Independence Valley Dr., Grand Junction, CO 81507.

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¹³ Modified Colitag™ Method. "Modified Colitag™ Test Method for the Simultaneous Detection of *E. coli* and other Total Coliforms in Water (ATP D05-0035)," August 28, 2009. Available at <https://www.nemi.gov> or from CPI International, 5580 Skylane Boulevard, Santa Rosa, CA 95403.

¹⁴ EPA Method 557. "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC-ESI-MS/MS)," September 2009. EPA 815-B-09-012. Available at <https://www.nemi.gov>.

¹⁵ AMI Turbiwell, "Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter," August 2009. Available at <https://www.nemi.gov> or from Markus Bernasconi, SWAN Analytische Instrumente AG, Stuebachstrasse 13, CH-8340 Hinwil, Switzerland.

¹⁶ EPA Method 334.0. "Determination of Residual Chlorine in Drinking Water Using an On-line Chlorine Analyzer," September 2009. EPA 815-B-09-013. Available at <https://www.nemi.gov>.

¹⁷ ChloroSense. "Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense," August 2009. Available at <https://www.nemi.gov> or from Palintest Ltd, 1455 Jamike Avenue (Suite 100), Erlanger, KY 41018.

¹⁸ EPA Method 302.0. "Determination of Bromate in Drinking Water using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection," September 2009. EPA 815-B-09-014. Available at <https://www.nemi.gov>.

¹⁹ EPA 415.3, Revision 1.2. "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," September 2009. EPA/600/R-09/122. Available at <http://www.epa.gov/water-research/epa-drinking-water-research-methods>.

²⁰ ReadyCult® Method. "ReadyCult® Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and *Escherichia coli* in Finished Waters," January, 2007. Version 1.1. Available from EMD Millipore (division of Merck KGaA, Darmstadt, Germany), 290 Concord Road, Billerica, MA 01821.

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²² Hach Company. "Hach Company SPADNS 2 (Arsenite-Free) Fluoride Method 10225—Spectrophotometric Measurement of Fluoride in Water and Wastewater," January 2011. 5600 Lindbergh Drive, P.O. Box 389, Loveland, Colorado 80539.

²³ Hach Company. "Hach Company TNTplus™ 835/836 Nitrate Method 10206—Spectrophotometric Measurement of Nitrate in Water and Wastewater," January 2011. 5600 Lindbergh Drive, P.O. Box 389, Loveland, Colorado 80539.

²⁴ EPA Method 525.3. "Determination of Semivolatile Organic Chemicals in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)," February 2012. EPA/600/R-12/010. Available at <http://www.epa.gov/water-research/epa-drinking-water-research-methods>.

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³⁴ Hach Company. "Hach Method 10241—Spectrophotometric Measurement of Free Chlorine (Cl₂) in Drinking Water," November 2015. Revision 1.2. 5600 Lindbergh Drive, P.O. Box 389, Loveland, CO 80539.

³⁵ Hach Company. "Hach Method 8026—Spectrophotometric Measurement of Copper in Finished Drinking Water," December 2015. Revision 1.2. 5600 Lindbergh Drive, P.O. Box 389, Loveland, CO 80539.

³⁶ Hach Company. "Hach Method 10272—Spectrophotometric Measurement of Copper in Finished Drinking Water," December 2015. Revision 1.2. 5600 Lindbergh Drive, P.O. Box 389, Loveland, CO 80539.

³⁷ Hach Company. "Hach Method 10261—Total Organic Carbon in Finished Drinking Water by Catalyzed Ozone Hydroxyl Radical Oxidation Infrared Analysis," December 2015. Revision 1.2. 5600 Lindbergh Drive, P.O. Box 389, Loveland, CO 80539.

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⁴⁸ EPA Method 150.3. "Determination of pH in Drinking Water," February 2017. EPA 815-B-17-001. Available at the National Service Center for Environmental Publications at <https://www.epa.gov/nscep>.

⁴⁹ *Standard Methods for the Examination of Water and Wastewater*, 23rd edition (2017). Available from American Public Health Association, 800 I Street NW, Washington, DC 20001-3710.

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⁵¹ Hach Company. "Hach Method 10258—Determination of Turbidity by 360° Nephelometry." March 2018. Revision 2.0. 5600 Lindbergh Drive, P.O. Box 389, Loveland, CO 80539.

⁵² Hach Company. "Hach Method 8195—Determination of Turbidity by Nephelometry." March 2018. Revision 3.0. 5600 Lindbergh Drive, P.O. Box 389, Loveland, CO 80539.

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⁵⁶ Bio-Rad. "Simultaneous Detection of Total Coliform Bacteria and *Escherichia coli* using RAPID'E. coli 2 (REC2) in Drinking Water." May 2020. Bio-Rad Laboratories, 2000 Nobel Drive, Hercules, California 94547.

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