

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141 and 143

[WH-FRL-6481-7]

RIN 2040-AD04

National Primary and Secondary Drinking Water Regulations: Analytical Methods for Chemical and Microbiological Contaminants and Revisions to Laboratory Certification Requirements

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This final rule contains revisions to drinking water regulations that were proposed for public comment in separate documents dated July 31, 1998, September 3, 1998, and January 14, 1999. In this rule, EPA is approving the use of updated versions of 25 American Society for Testing and Materials (ASTM), 54 Standard Methods for Examination of Water and Wastewater (Standard Methods or SM) and 13 Environmental Protection Agency (EPA) analytical methods for compliance determinations of chemical contaminants in drinking water. At the same time, the Agency is withdrawing approval of the previous versions of the 13 EPA Methods. Previous versions of the SM and ASTM methods will continue to be approved. EPA is also approving use of a new medium and two new methods for simultaneous determination of total coliforms and *E. coli.*, a new method for determination of lead, six new methods for determination of magnesium, and two new methods for determination of acid herbicides. The Agency is also making several technical corrections or clarifications to the regulations, amending the regulation to provide for changes in the composition of Performance Evaluation (PE) samples, requiring a successful PE sample analysis each year for chemical analyses, and requiring method specific laboratory certification criteria for reporting compliance data. This rule also adds two ASTM and two SM methods to those recommended for secondary monitoring of sulfate and chloride.

DATES: This final rule becomes effective on January 3, 2000. The incorporation by reference of the publications listed in today's rule is approved by the Director of the Federal Register as of January 3, 2000. For Judicial Review purposes, this final rule is promulgated as of 1 p.m. (Eastern time) on December 15, 1999, as provided in 40 CFR 23.7.

ADDRESSES: The record for this rulemaking has been established under three separate docket numbers: W-97-04 for the September 3, 1998 (63 FR 47115) rule; W-97-05 for the July 31, 1998 (63 FR 41134) rule; and W-98-27 for the January 14, 1999 (64 FR 2538) rule. Supporting documents including references and methods cited in this document, public comments received on the proposal and EPA's responses, are available for review at the US Environmental Protection Agency, Water Docket, East Tower Basement, 401 M Street, SW, Washington, D.C. 20460. For access to the docket materials, call 202-260-3027 on Monday through Friday, excluding Federal holidays, between 9 a.m. and 3:30 p.m. Eastern Time for an appointment.

FOR FURTHER INFORMATION CONTACT: The EPA Safe Drinking Water Hotline. Callers within the United States may reach the Hotline at (800) 426-4791. The Hotline is open Monday through Friday, excluding Federal holidays, from 9 a.m. to 5:30 p.m. Eastern Time.

For technical information on microbiology methods contact Paul S. Berger, Ph.D., (202-260-3039). For technical information regarding chemistry methods, contact Jeanne Campbell (202-260-7770). Both individuals are in the Standards and Risk Management Division, Office of Ground Water and Drinking Water (MC-4607), US Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460. For a list of Regional Contacts see **SUPPLEMENTARY INFORMATION.**

SUPPLEMENTARY INFORMATION: Potentially Regulated Entities

Public water systems are the regulated entities required to conduct analyses to measure for contaminants in water samples. However, EPA Regions, as well as States, local, and tribal governments with primacy to administer the regulatory program for public water systems under the Safe Drinking Water Act, sometimes conduct analyses to measure for contaminants in water samples. If EPA has established a maximum contaminant level ("MCL") for a given drinking water contaminant, the Agency also "approves" standardized testing procedures (i.e., promulgated through rulemaking) for analysis of the contaminant. Once EPA standardizes such test procedures, analysis using those procedures (or approved alternate test procedures) is required. Public water systems required to test water samples must use one of the approved standardized test

procedures. Categories and entities that may ultimately be regulated include:

Category	Examples of potentially regulated entities	SIC
State, Local, and Tribal Governments.	States, local and tribal governments that analyze water samples on behalf of public water systems required to conduct such analysis; States, local, and tribal governments that themselves operate public water systems required to conduct analytic monitoring.	9511
Industry	Industrial operators of public water systems.	4941
Municipalities	Municipal operators of public water systems.	9511

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could potentially be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your facility is regulated by this action, you should carefully examine the applicability language at 40 CFR 141.2 (definition of public water system). If you have questions regarding the applicability of this action to a particular entity, consult one of the persons listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

Regional Contacts

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Information on Internet Access

This **Federal Register** document has been placed on the Internet at the following location: <http://www.epa.gov/fedrgrstr>. Information about analytical methods approved for compliance monitoring can be found at the following location: <http://www.epa.gov/OGWDW/methods/methods.html>.

Availability and Sources for Methods

Copies of final EPA Methods are available for a nominal cost through the National Technical Information Service (NTIS), US Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. NTIS also may be reached at 800-553-6847. Copies of EPA Methods 515.3 and 549.2 may be obtained from USEPA, National Exposure Research Laboratory (NERL)-Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268. Written requests for copies of EPA Methods 515.3 and 549.2 may be faxed to NERL-Cincinnati at 513-569-7757 or sent via E-mail to: Dwmmethods.help@epa.gov. All other methods must be obtained from the publisher. Publishers (with addresses) for all approved methods are cited at 40 CFR Part 141 and in the References section of today's rule.

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I. Statutory Authority

The Safe Drinking Water Act (SDWA), as amended in 1996, requires EPA to promulgate national primary drinking water regulations (NPDWRs) which specify maximum contaminant levels (MCLs) or treatment techniques for drinking water contaminants (SDWA section 1412 (42 U.S.C. 300g-1)). NPDWRs apply to public water systems pursuant to SDWA section 1401 (42 U.S.C. 300f(1)(A)). According to SDWA section 1401(1)(D), NPDWRs include "criteria and procedures to assure a supply of drinking water which dependably complies with such maximum contaminant levels; including quality control and testing procedures. * * *" (42 U.S.C. 300f(1)(D)). In addition, SDWA section 1445(a) authorizes the Administrator to establish regulations for monitoring to

assist in determining whether persons are acting in compliance with the requirements of the SDWA (42 U.S.C. 300j-4). EPA's promulgation of analytical methods is authorized under these sections of the SDWA as well as the general rulemaking authority in SDWA section 1450(a), (42 U.S.C. 300j-9(a)).

II. Regulatory Background and History

EPA has promulgated analytical methods for all currently regulated drinking water contaminants for which MCLs or monitoring requirements have been promulgated. In most cases, the Agency has promulgated regulations specifying (i.e., approving) the use of more than one standardized analytical method for a particular contaminant. Systems may use any one of them for determining compliance with an MCL or monitoring requirement. After any regulation is published, EPA may amend the regulations to approve additional methods or modifications to existing approved methods, or withdraw approved methods that become obsolete.

On July 31, 1998, and January 14, 1999, EPA proposed to amend the regulations to approve the use of several new methods and modifications to existing methods that EPA believes are as good as or better than the current methods and procedures. The January 14 notice also proposed six analytical methods for magnesium, which would compensate for an omission in the Stage 1 Disinfectants and Disinfection Byproducts (DBP) Rule (63 FR 69390, December 16, 1998). The DBP Rule allows certain surface water systems that are unable to achieve the specified level of total organic carbon removal instead to meet one of several alternative performance criteria, including the removal of 10 mg/L magnesium hardness from source water. The DBP Rule, however, does not include any analytical methods for magnesium.

In addition to these two proposed rules, EPA proposed a rule on September 3, 1998, which was a companion to a direct final rule published on the same day (63 FR 47098). In the September 3, 1998 rule, EPA proposed approving the use of updated versions of previously approved analytical methods, the withdrawal of older versions of certain EPA methods, minor technical corrections or clarifications, and amendments to the regulations. The direct final rule, in the absence of adverse public comment, would have been final on January 4, 1999. Because adverse comments were received, EPA

withdrew the entire September 1998 rule on December 31, 1998 (63 FR 72200) and deferred final action in order to respond to those comments.

III. Summary of Final Rule

A. This Rule Amends the Regulations at 40 CFR Part 141 To

1. Allow use of newer versions of 25 methods published by the American Society for Testing and Materials (ASTM). The new versions are published in the 1996 *Annual Book of ASTM Standards*, Vols. 11.01 and 11.02.
2. Allow use of newer versions of 54 methods published by the Standard Methods Committee. The new versions are published in *Standard Methods for the Examination of Water and Wastewater*, 19th edition, 1995.
3. Allow use of 13 of the 14 compliance monitoring methods published by EPA in the document, *Methods for the Determination of Organic Compounds in Drinking Water—Supplement III*, EPA/600/R-95/131, August 1995. These 13 methods replace the previous versions of these methods. The compliance method published in Supplement III that is not approved in today's rule is EPA Method 515.1, Rev. 4.1; the previous version, Rev. 4.0, continues to be the approved version.
4. Approve a new method for the determination of lead under the Lead and Copper Rule, Palintest Method 1001.
5. Approve six new methods for the determination of magnesium, EPA Method 200.7, ASTM D-511-93 versions A and B, and SM 3500-Mg versions B, C and E under the DBP Rule.
6. Approve two additional methods for the determination acid herbicides, EPA Method 515.3 and ASTM D5317-93.
7. Replace EPA Method 549.1 for determination of Diquat with EPA Method 549.2.
8. Approve use of a new membrane filter medium, MI (4-Methylumbelliferyl-Beta-D-galactopyranoside—Indoxyl-Beta-D-glucuronide) Agar, for the simultaneous determination of total coliforms and *E. coli* in drinking water under the Total Coliform Rule (TCR) and source water under the Surface Water Treatment Rule (SWTR).
9. Approve two new methods for determination of total coliforms, E*Colite® Test and m-ColiBlue24® Test in source water under the SWTR.
10. Require that microbiological samples collected for the determination of coliforms or fecal coliforms in source water under the SWTR or for determination of heterotrophic bacteria

in distribution system samples be shipped and held below 10°C.

11. Reduce the minimum incubation time for reading the Colisure Test, for determination of total coliforms, from 28 hours to 24 hours in drinking water under the TCR.

12. Require that a PE sample for chemical contaminants be successfully analyzed at least once each year using each method used to report compliance monitoring results. Additional methods used for confirmation testing, however, would not require PE proficiency testing.

13. Clarify that the acceptance limits for successfully measuring chemical analytes in a PE sample apply only if that analyte has been added to the PE sample.

14. Increase the maximum holding time from 48 hours to 14 days for chlorinated, unacidified drinking water samples collected for determination of nitrate.

15. Promote safe handling of acids by clarifying that acidification of samples for determinations of metals can be conducted in the laboratory rather than in the field and allowing use of dilute (1:1) solutions of acid to preserve samples collected for the determination of metals or nitrate (including total nitrate).

16. Provide an option for field/laboratory determinations of alkalinity, calcium, conductivity, orthophosphate and silica in drinking water samples by any person acceptable to the State to conduct these determinations. Previously a laboratory had to be certified to conduct these determinations.

B. This Rule Amends the Regulations at 40 CFR Part 143 To

1. Add methods for the determination of chloride to the table of methods recommended for the optional monitoring of secondary drinking water contaminants. The new recommended methods for chloride are ASTM D 512-89B and SM 4500-Cl-B.

2. Add methods for the determination of sulfate to the table of methods recommended for the optional monitoring of secondary drinking water contaminants. The new recommended methods for sulfate are ASTM D 516-90 and SM 4500-SO₄²⁻-E.

IV. Response to Comments

EPA received 15 comments on the July 31, 1998 (63 FR 41134) proposal, 13 comments on the September 3, 1998 (63 FR 47115) rule, and 21 comments on the January 14, 1999 proposal (64 FR 2538). Commenters represented analytical laboratories, water utilities, instrument

manufacturers, State and local governments, trade associations, scientists, and private citizens. A summary of major public comments on the proposed rules and the Agency's response is presented in this section. The Agency's complete response to all comments on these rules is available in the public docket for this rule.

Except as noted in Part V of this preamble, the provisions in today's rule are the same as those proposed in the July 31, 1998, the September 3, 1998 and the January 14, 1999, **Federal Register** notices.

A. Response to Significant Comments Received on the July 31, 1998 (63 FR 41134) Notice

1. Using the Same Method To Analyze Compliance Monitoring Samples and Performance Evaluation Samples

Several commenters objected to the July 1998 proposal that would require laboratories to use the same method to report the results of analyses of compliance monitoring samples and the annual PE sample that is required to maintain certification for drinking water. No commenter stated that it was unsound scientifically to require testing laboratory proficiency with a PE sample using the same method used for routine compliance monitoring. Commenters criticized the requirement, because it was too expensive or did not conform with the National Environmental Laboratory Accreditation Conference (NELAC) standard for PE sample analysis.

The commenters did not quantify what would be too expensive nor provide any cost estimates of the degree or extent that costs would increase for drinking water compliance monitoring under the proposed requirement. All States currently require the proposed practice. In addition, Chapter Three of the *EPA Manual for the Certification of Laboratories Analyzing Drinking Water* Fourth Edition (EPA 1997) recommends that, "If a laboratory wishes to be certified for a contaminant by more than one method, it should analyze the PE samples by each method for which it wishes to be certified." In this context "to be certified" means to be permitted to report compliance monitoring data. Two factors mitigate the cost of analyzing PE samples-by-method. First, a PE sample analysis is required only for each method used to report compliance data. Second, if a laboratory analyzes samples for an analyte and confirms the result by analysis with a second method, the laboratory is required to pass a PE only with the method used to report the compliance data. For labs that

elect to report compliance results using more than one method per analyte, the incremental cost of an extra PE sample analysis is small, manageable and reasonable, and justified by the need to ensure that a laboratory is qualified to report data with each method.

The Agency has worked with NELAC to maximize compatibility between NELAC standards and the EPA laboratory certification requirements. The NELAC standards state that a State or federal regulation would supersede a NELAC standard when a conflict exists. EPA has the ultimate responsibility to ensure the quality and integrity of compliance monitoring data reported under the SDWA and other statutes. NELAC standards can be an alternative means to implement regulatory requirements for drinking water laboratory certification, but they are not a substitute for drinking water regulations. EPA strongly encourages States to adopt NELAC standards, but adoption is voluntary.

Three commenters supported the proposed requirement, but were concerned that the proposed change may be misinterpreted and require one to pass the PE sample for all analytes even if one were only measuring a subset of the analytes in a compliance sample (e.g., using EPA 552.1 to determine dalapon, but not the haloacetic acids). EPA does not believe the requirement will be subject to misinterpretation. If one uses EPA 552.1 to report only dalapon data, the PE sample results need only include dalapon. EPA intends to provide further guidance on this requirement in the laboratory certification manual when it is revised, and provide other assistance as specific questions arise.

2. Withdrawal of EPA Method 549.1 for Diquat

Four commenters stated they have not had any regular precipitation problems using EPA Method 549.1. Some of these commenters believe that withdrawal of EPA Method 549.1 is unnecessary and a hardship because it would require use of the new EPA Method 549.2. One of the commenters noted to the contrary that elimination of the pH adjustment simplifies the method and should not have a negative effect.

EPA agrees that not all matrices exhibit the precipitation problem at the pH adjustment step, which may be why commenters did not report significant precipitation problems with EPA Method 549.1. However, the Agency has received complaints that precipitation occurs in hard water matrices. EPA has verified this problem in simulated hard water matrices containing high

concentrations of magnesium. After carefully reviewing all of the procedural steps of EPA Method 549.1, EPA experimentally retested the pH adjustment step. The test demonstrated that the pH adjustment to pH 10.5 did not improve extraction efficiency as had been reported in literature. Increasing pH to 10.5 actually had a negative effect on recovery because of the degradation of Diquat at strongly alkaline pH. Therefore, the pH adjustment step was removed and the method was reissued and proposed as EPA Method 549.2. The pH retest step and other data are in the administrative record of the July 31, 1998 (63 FR 41134) rule.

Use of EPA Method 549.2 does not require re-certification or learning the use of a new method. EPA Method 549.2 is EPA Method 549.1 without the pH adjustment step. Requiring a step (pH adjustment) to be omitted from the current method does not impose a hardship on analytical laboratories or the regulated community. As no positive effect is associated with the pH adjustment to 10.5, and there is the possibility of a negative effect, the Agency is withdrawing EPA Method 549.1.

3. MI-Agar Medium for Coliform Determinations

In the July 31, 1998 rule, EPA proposed to approve the use of MI Agar for use with the Total Coliform Rule and Surface Water Treatment Rule. The Agency had proposed that the results from MI Agar can be read following incubation of media for 16–24 hours. Two commenters suggested that the MI Agar procedure should be approved as a 24 hour procedure since results in the comparison study were read at 24 hours. EPA data demonstrates that blue *E. coli* and fluorescent total coliform colonies appear in as few as 9 hours, which would be detected by the laboratory in 16–24 hours, depending upon the time of day the sample was filtered. However, because the appearance time for the blue *E. coli* colonies exceeded the standard 8-hour working day and because EPA planned to compare the MI Agar procedure with one using M-Endo medium, a 24-hour method, EPA used the 24-hour incubation time for the studies. Thus, the Agency is approving the method as a 24-hour test (although the test may be recorded as positive if this result shows up earlier than 24 hours). The test is approved for detecting total coliforms and *E. coli* under the Total Coliform Rule and for enumerating total coliforms under the Surface Water Treatment Rule.

B. Responses to Significant Comments Received on the September 3, 1998 (63 FR 47115) Notice

1. Quality Control Improvements for EPA Methods

Four commenters on the September 1998 rule noted that, although many Supplement III methods contain tightened analyte recovery control limits of $\pm 30\%$, the data presented in some of these methods do not support the change. Commenters provided data or other information to support their argument for the following analytes: 2,4-DB, Acifluorfen, DCPA, Dinoseb, pentachlorophenol and Picloram in EPA Method 515.1, Rev. 4.1; hexachlorocyclopentadiene (HCP) in EPA Method 508.1, Rev. 2.0; and DDT in EPA Method 508, Rev. 3.1. The commenters recommended either (1) retaining the current limits of ± 3 standard deviations or method limits, whichever are narrower for these three methods or (2) setting the recovery control limits on an analyte-by-analyte basis.

EPA revised the quality control requirements to set a limit on the range of acceptable recoveries of analytes. Previously the allowed variability had no limit because it was based on relative standard deviation (RSD) of previous recoveries and could increase to unacceptable limits if the RSD continued to increase during routine use of the method. The proposed revised criteria would allow the recoveries to vary by as much as three times the RSD provided this value does not exceed a fixed numerical limit. The fixed (usually $\pm 30\%$) limit is specified in the initial demonstration of capability section of each EPA method. After reviewing public comment, EPA agrees that the fixed criteria may be too restrictive for some analytes. Specifically, because the recovery limits of $\pm 30\%$ for some of the regulated acid herbicides in EPA Method 515.1, Rev. 4.1 are not fully supported by the available data, the Agency will not approve this revision of EPA Method 515.1. The current revision, 4.0, will remain approved with the current recovery control limits of ± 3 standard deviations. EPA may evaluate the available data to determine if a better recovery control strategy can be developed for a future proposal. Because of this change, EPA will not impose the $\pm 30\%$ criterion on the ASTM version of EPA Method 515.1, D5137–93, that is approved in today's rule.

The Agency is keeping the $\pm 30\%$ recovery criterion for other Supplement III methods, including EPA Methods 508 and 508.1, because the data

published in these methods supports the tighter control limits. The control limits of DDT from reagent water listed in Table 2 of EPA Method 508 range from 82% to 142%, i.e. $112\% \pm 30\%$. The mean recoveries observed for the two synthetic waters (Table 2) and another reagent water (Table 3) are 98%, 84% and 87%, all of which fall within the allowed 82–142% recovery control limits. Although EPA agrees that data published for HCP in EPA Method 508.1, Rev. 2.0 does not support the $\pm 30\%$ limits for HCP, the failure is due to the extremely low spiking levels of HCP used, i.e., four to six times the method MDL of 0.004 $\mu\text{g/L}$. In Section 9.3 of most Supplement III methods the specified minimum spiking level is ten times the MDL, which for HCP would be 0.04 $\mu\text{g/L}$, or at some midpoint of the calibration curve between the MDL and the MCL, which for HCP would be 25 $\mu\text{g/L}$. Data in the Supplement III version of EPA Method 525.2 was obtained with HCP spiked at higher concentrations and supports the $\pm 30\%$ recovery control limits. EPA Method 525.2 data supports the HCP control limits in EPA Method 508.1 because the procedure for the recovery of HCP from a drinking water sample is identical in both methods. The main difference between the methods is the detection system, which would not affect recovery of HCP from drinking water in any way.

2. Nitrate and Nitrite Determinations

Nitrate 48-Hour Holding Time: Two commenters believe the 48-hour limit specified in the September 1998 rule for unacidified samples is not justified when the drinking water has been disinfected. The commenters provided data and cited a reference [Williams 1979] to demonstrate the stability of nitrate in chlorinated drinking water samples that have not been acidified. One commenter recommended a holding time of 14 to 28 days. The proposed 48 hour limit was based on the recommended preservation conditions in the approved methods published by EPA, ASTM and Standard Methods. Data submitted by the commenters and in an EPA study [EPA 1987] support a longer holding time. The JAWWA report showed no difference between the two types (acidified and unacidified) of samples over a period of 14 days; the EPA report recommended a holding time of 16 days. EPA accepts the commenters' data and is increasing the holding time to 14 days at 4° C for chlorinated, unacidified samples but is keeping the current requirement of 48 hours for unacidified, unchlorinated drinking water samples.

Nitrite Determinations in Some Disinfected Drinking Water Samples: The September 1998 notice included a footnote 2 in the preservation table at § 141.23(k)(2) which explained that analysis of samples disinfected with a strong oxidant (such as free chlorine, chlorine dioxide or ozone) can only provide a total nitrate (nitrate plus nitrite) result because all nitrite will be oxidized to nitrate. One commenter suggested that EPA drop the new footnote because it was incorrect. The commenter provided data to show that nitrite can occur in supplies disinfected with chlorine if a sufficiently high level of ammonia is present. EPA proposed the footnote to remove a burden from PWSs that conduct unnecessary measurements of nitrite that has been oxidized to nitrate in a chlorinated water sample. These measurements are a burden when samples must be shipped, because the maximum holding time for nitrite samples is 48 hours. Although chlorine and other strong oxidant disinfectants will usually oxidize nitrite to nitrate in a water sample, EPA agrees that this may not occur in all chlorinated water supplies. Thus, the footnote has not been added to the preservation table. EPA may use other means to reduce the burden of nitrite analysis at a PWS when use of a strong oxidant disinfectant clearly makes a nitrite determination unnecessary.

3. Approval of 20th Edition of Standard Methods

Several commenters applauded EPA's decision to approve 19th edition of Standard Methods but urged EPA to consider approval of 20th edition as it will be published before this final rule takes effect. The timing of promulgation of this rule and publication of the 20th edition did not allow sufficient time for review of the 20th edition by the Agency. The Agency has begun this review and once a review is complete intends to propose to incorporate the latest edition of Standard Methods and other voluntary consensus standards, seek comments and finalize these changes.

4. EPA's Decision Against Withdrawal of Older Editions of Consensus Methods

Three commenters expressed concern that EPA has chosen to cite not only the most recent edition of Standard Methods but also older editions which are no longer available from the publisher. The Agency believes that the differences between the methods in earlier and newer editions are not significant to warrant the removal of older editions or impose any possible

additional economic burden (especially on small laboratories) to require the purchase of new editions.

C. Response to Significant Comments Received on the January 14, 1999 (64 FR 2538) Notice

1. False-Positive Rates for m-ColiBlue24® Test and E*Colite® Test

Several commenters contended that the false-positive rates for the E*Colite® Test and m-ColiBlue24® Test were too high and consequently opposed approval of these tests without an additional analytical procedure to ensure that those positives were actually coliforms. According to data submitted by the manufacturers that developed the two proposed tests, the false positive rates were: 16.0% for total coliforms and 7.2% for *E. coli* (E*Colite Test®), and 26.8% for total coliforms and 2.5% for *E. coli* (m-ColiBlue24® Test).

As part of its process for evaluating new methods for regulated drinking water contaminants, EPA recommends that applicants follow the testing protocols developed by EPA for use under the Alternative Test Procedure (ATP) and provide EPA with the resulting data. The two existing protocols for total coliforms/*E. coli* direct the applicant to provide the false-positive rate, false-negative rate, comparison data with an EPA-specified reference method, and other information. The current protocols, however, do not set an upper limit for the false-positive and false-negative rates. Because the two applicants met all the conditions of the protocol, and the protocols do not set an upper limit for the false-positive rate, EPA next decided whether the false-positive results were sufficiently great so as to require a verification step.

The Agency decided that the rates are not so high to require a verification step. First, the definition of "total coliforms" is not tightly defined. The definition is not strictly based upon taxonomy, but rather on the basis of gas production from the fermentation of lactose. EPA has approved some coliform tests (e.g., Colilert test) that are based not upon this process, but rather on some other means of determining whether the organism uses lactose. Therefore, the different methods may not be testing for exactly the same set of organisms, and this situation clouds the meaning of the term "false-positive." Second, the Agency believes that public health would not be jeopardized with the higher false-positive rates because any false-positive result would err on the side of safety. Third, the Agency notes that a single total coliform-positive

sample does not result in an MCL violation. Thus the adverse consequence of a "false-positive" for the system is mitigated. Finally, water systems have a choice among several methods currently approved for coliform. The user should take the false-positive rate (and, more importantly, the false-negative rate) into account in choosing which analytical methods to use for compliance sampling. Therefore, the Agency is not requiring a verification step for these two methods although systems/laboratories may elect to verify a total coliform-positive test at their discretion. The Agency notes that the *Manual for the Certification of Laboratories Analyzing Drinking Water* (4th ed., EPA 815-B-97-001, March 1997), at paragraph 5.1.8, encourages laboratories to perform parallel testing between a newly approved test and another EPA-approved procedure for enumerating total coliforms for at least several months and/or over several seasons to assess the effectiveness of the new test for the wide variety of water types submitted for analysis.

To emphasize the point that systems and laboratories should carefully choose which coliform method to use, the Agency has added a footnote to the table on approved methods for total coliforms in 141.21(f) that states:

EPA strongly recommends that laboratories evaluate the false-positive and negative rates for the method(s) they use for monitoring total coliforms. EPA also encourages laboratories to establish false-positive and false-negative rates within their own laboratory and sample matrix (drinking water or source water) with the intent that if the method they choose has an unacceptable false-positive or negative rate, another method can be used. The Agency suggests that laboratories perform these studies on a minimum of 5% of all total coliform-positive samples, except for those methods where verification/confirmation is already required, e.g., the M-Endo and LES Endo Membrane Filter Tests, Standard Total Coliform Fermentation Technique, and Presence-Absence Coliform Test. Methods for establishing false-positive and negative rates may be based on lactose fermentation, the rapid test for β -galactosidase and cytochrome oxidase, multi-test identification systems, or equivalent confirmation tests. False-positive and false-negative information is often available in published studies and/or from the manufacturer(s).

In addition to this footnote, to assist systems and laboratories in choosing a method, EPA is planning two future actions. First, EPA intends to prepare and widely distribute a list of the Agency-approved coliform methods, along with published false-positive and false-negative rates for each. Second, EPA intends to re-evaluate whether the alternate test procedure protocol for

coliforms should include specific limits for the false-positive and false-negative rates, whether to specify more precisely how these rates are to be determined, and whether to revise the comparison study to correct for the false-positive rates.

As a result of these measures, the Agency might undertake rulemaking that would require laboratories to use another test to verify the results from one or more of the coliform methods that the Agency has previously approved for drinking water analyses or are being approved in today's rule. Alternatively, the Agency may issue guidance rather than regulations on this issue. EPA is approving the three proposed coliform methods in today's rule rather than delay approval until the conclusion of this re-evaluation, because (1) The issue is not whether the test should be approved, but rather whether a verification step is needed, (2) Any future verification requirement may cover not only the three proposed coliform methods, but also previously EPA-approved methods, and (3) The Agency may issue guidance to the States, laboratories, and water systems on this issue rather than regulations. In the interim, EPA is recommending that each laboratory establish false-negative and false-positive rates for the water matrices to be tested, if it uses a method(s) for which EPA does not currently require a confirmation/verification step.

2. m-ColiBlue24® Test and E*Colite® Test: Presence-Absence vs. Density Measurements

Commenters requested clarification whether the m-ColiBlue24® Test and E*Colite® Test were being proposed as presence-absence type tests or density tests. EPA proposed, and is approving, these two tests only as presence-absence type tests, i.e., to determine the presence or absence of total coliforms and *E. coli* in a 100-mL water sample under the Total Coliform Rule (TCR). The two methods have not been approved for use under the SWTR by unfiltered systems to enumerate densities of total coliforms in the source water.

3. m-ColiBlue24® Test: Incubation Time

Commenters requested clarification of the incubation time for m-ColiBlue24®. EPA is approving this method and the Colisure test as 24-hour tests.

4. E*Colite® Test: Accidental Release of Bactericide

E*Colite® Test has a bactericide compartment that is separated by a seal from the reaction compartment. Two

commenters were concerned that an accidental release of the bactericide could result in either sample loss or undetected false-negatives. According to a letter to EPA, dated April 13, 1999, from the manufacturer, Charm Sciences has quality assurance criteria for the integrity of the seal between the reaction compartment and the bactericide compartment. The Agency has included the letter in the docket for today's rule. Charm Sciences tests the seal between the bactericide and the culture in raw material acceptance specifications. Test bags must have a failure rate of <0.2% after 72 hours incubation at 37° C. In addition, the manufacturer adds a red dye to the bactericide so that a faulty seal between the compartments is quickly identified by the user as a flawed test. Finally, Charm Sciences, in an improvement, dispenses the bactericide in a protective foil pouch contained inside the bactericide compartment. This additional pouch offers a failure rate <0.2%. According to Charm Sciences, the probability of a simultaneous compartment seal failure and a pouch failure would be $P < 0.00004$. As a result, the Agency believes an accidental release of bactericide is improbable.

5. Magnesium: Inductively Coupled Plasma—Mass Spectrometry (EPA Method 200.8)

The January 14 notice proposed six analytical methods for magnesium. EPA is approving all six methods. One commenter recommended that EPA approve the use of EPA Method 200.8, Inductively Coupled Plasma—Mass Spectrometry, in addition to the other six methods for analysis of magnesium. The Agency, however, does not have the data to support the use of EPA Method 200.8 for magnesium, and thus is not approving this method.

6. Lead: Anodic Stripping Voltammetry Method (Method 3130 B in *Standard Methods*)

The January 14 notice proposed a new alternate test procedure for lead, Method 1001, *Lead in Drinking Water Differential Pulse Anodic Stripping Voltammetry (DPASV)*, developed by Palintest LTD. Two commenters recommended that EPA approve the Anodic Stripping Voltammetry Method for lead (Method 3130 B) that appears in *Standard Methods*. The commenters did not provide their rationale, but apparently believe that approval is warranted based upon the fact that it is a consensus method equivalent to the proposed Palintest Procedure.

EPA reviewed Method 3130 in *Standard Methods* to determine whether

the method could be approved on the basis that it was equivalent to the proposed Palintest Procedure (Method 1001). While the Agency notes that both procedures employ the same measurement technique, i.e., Differential Pulse Anodic Stripping Voltammetry, it does not believe that this fact, by itself, is sufficient to claim that the methods are equivalent.

Based upon the description provided in *Standard Methods*, the Agency does not believe there is sufficient data to show that the methods are equivalent. Method 3130 (Sections 1a and 1c) mentions sample digestion, and references Section 3030. While Section 3030 presents several acid digestion procedures, there is no supporting data employing the cited procedure(s) to show the efficacy of Method 3130 in conjunction with the measurement phase. In addition, in the section on "procedure" (Section 4), there is no mention of a specific value for the detection limit, nor linear dynamic range data, for either the hanging mercury drop electrode or the thin mercury film electrode, in the context of the operating parameters listed in the table, "Instrumental conditions."

Also, the section on "quality control" (Section 6) only states that the guidelines in Section 3020 should be followed. The guidelines in 3020, Quality Control, state that one should refer to individual method(s) for method specific quality control requirements. Thus, Method 3130 neither presents nor provides an acceptable cite for method quality assurance. Although Section 1020 B, Quality Control, discusses and/or describes the necessary elements of QC, it does not present the necessary data to demonstrate equivalency.

For the reasons indicated above, EPA is not approving Method 3130 in this rule. However, the Agency may decide to approve this method as a consensus method under a subsequent edition of *Standard Methods*, once the concerns indicated above are resolved.

V. Changes Between the Proposed Rules and the Final Rule

Except as noted below, the actions in today's final rule are the same as the proposed actions.

A. Changes to the July 31, 1998 Proposed Rule

MI Agar Medium for Coliform Determinations

The Agency proposed that results from MI Agar can be read following 16–24 hour incubation. In today's final rule the Agency has approved MI Agar as a 24 hour test.

*B. Changes to September 3, 1998
Proposed Rule*

1. Acid Herbicide Methods: EPA 515.1 (Rev. 4.1) and ASTM D 5317-93

EPA will not withdraw EPA Method 515.1 (Rev. 4.0) as proposed in the September rule and replace it with EPA Method 515.1 (Rev. 4.1) for the determination of acid herbicides the data in Rev. 4.1 does not support the upper limit of $\pm 30\%$ for the recovery of some method analytes. Because of this change, EPA will not require that the $\pm 30\%$ criterion be applied to determinations of acid herbicides using ASTM D 5317-93. EPA Method 515.1 Rev. 4.1 is published in *Methods for the Determination of Organic Compounds in Drinking Water—Supplement III* (Supplement III), EPA/600/R-95/131, August 1995. EPA Method 515.1 Rev. 4.0 is published in *Methods for the Determination of Organic Compounds in Drinking Water*, EPA/600/4-88/039, December 1988, Revised, July 1991. The other 13 compliance methods in Supplement III are approved in today's rule and replace the previously approved versions of these methods. EPA is withdrawing approval of the previous versions of the 13 EPA methods effective on June 1, 2001.

2. Nitrate and Nitrite Determinations

EPA is changing two of the amendments that were proposed at 141.23(k)(2) for determinations of nitrate or nitrite. The proposed amendments would have eliminated the requirement to determine nitrite in some drinking waters that are disinfected and require unacidified, chlorinated samples to be analyzed within 48 hours of collection. Under certain conditions nitrite is not completely oxidized to nitrate in disinfected water supplies, EPA will not eliminate the requirement to determine nitrite in disinfected water supplies. Therefore, EPA is increasing the proposed holding time for unacidified samples of chlorinated drinking water from 48 hours to 14 days.

3. Acidification of Samples

The footnotes to the table of preservation requirements at § 141.23(k)(2) are revised to allow use of dilute rather than concentrated acids and to clarify that current regulations do not require that samples for determination of metals be acidified in the field at the time of collection. This information was previously omitted from the table, because most approved methods specify use of dilute acid or that metals (not nitrate) samples may be

analyzed 16 hours after they have been acidified at the laboratory.

4. Methods for Monitoring Unregulated Contaminants

The methods for unregulated monitoring at 40 CFR 141.40 will not be updated, because other regulatory actions (the Unregulated Contaminant Monitoring Rule, UCMR) will supersede the currently specified methods. These changes were published as a final rule on September 17, 1999 (64 FR 50556).

*C. Changes to January 14, 1999
Proposed Rule*

There were no changes to the actions or methods proposed in this rule.

VI. Performance-Based Measurement System

EPA plans to implement in the future a performance-based measurement system (PBMS) that would allow the option of using either performance criteria or reference methods in its drinking water regulatory programs. The Agency is currently determining the specific steps necessary to implement PBMS in its programs and preparing an implementation plan. Final decisions have not yet been made concerning the implementation of PBMS in water programs. However, EPA is currently evaluating what relevant performance characteristics should be specified for monitoring methods used in the water programs under a PBMS approach to ensure adequate data quality. EPA would then specify performance requirements in its regulations to ensure that any method used for determination of a regulated analyte is at least equivalent to the performance achieved by other currently approved methods.

Once EPA has made its final determinations regarding implementation of PBMS in programs under the Safe Drinking Water Act, EPA would incorporate specific provisions of PBMS into its regulations, which may include specification of the performance characteristics for measurement of regulated contaminants in the drinking water program regulations.

VII. Regulation Assessment Requirements

A. Executive Order 12866

Under Executive Order 12866 (58 FR 51735; October 4, 1993), the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review.

B. Regulatory Flexibility Act (RFA), as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 USC 601 et. seq.

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

The RFA provides default definitions for each type of small entity. It also authorizes an agency to use alternative definitions for each category of small entity, "which are appropriate to the activities of the agency" after proposing the alternative definition(s) in the **Federal Register** and taking comment. 5 U.S.C. 601 (3)-(5). In addition to the above, to establish an alternative small business definition, agencies must consult with SBA's Chief Counsel for Advocacy.

For purposes of assessing the impacts of today's rule on small entities, EPA considered small entities to be those public water systems serving 10,000 or fewer customers. Public water systems includes both publicly and privately owned water systems. In accordance with the RFA requirements, EPA proposed using this alternative definition for governmental jurisdictions, small businesses and small not-for-profit enterprises in the **Federal Register** (63 FR 7620-7621 (February 13, 1998)), requested public comment, consulted with the Small

Business Administration (SBA) on the alternative definition as it relates to small businesses, and finalized the alternative definition in the final Consumer Confidence Report regulation on, 63 FR 44524-44525 (August 19, 1998). As stated in that Final Rule, the alternative definition would be applied to all future drinking water regulations.

After considering the economic impact of today's final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. Although this final rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this rule on small entities. Today's rule approves new and revised versions of currently approved EPA Methods, ASTM Methods and Standard Methods for compliance with drinking water standards and monitoring requirements. Previous versions of these ASTM and Standard Methods will not be withdrawn. Public water systems and laboratories performing analyses on behalf of these systems may continue to use them after the promulgation of today's rule. Previous versions of 13 EPA Methods, however, will be withdrawn after 18 months. The delayed effective date for withdrawal should provide ample time for the changeover. The incremental change in cost associated with the use of the new versions of EPA methods will be very minor because the new versions contain only technical enhancements and editorial improvements. This rule also provides public water systems additional options for detecting total coliforms and *E. coli* in drinking water under the Total Coliform Rule and source water under the Surface Water Treatment Rule, for measuring magnesium under the DBP Rule, and for measuring lead under the Lead and Copper rule.

This rule also made minor technical corrections, amendments, or clarifications to the regulations and laboratory certification requirements. Laboratories conducting analysis for contaminants in drinking water are required to be certified for proficiency in the analytical method they actually use for drinking water compliance monitoring. Thus, in the case of laboratories that choose to be certified for an analyte using more than one approved method, the regulation will require such laboratories to analyze a PE sample for each method for which certification is requested. Currently most laboratories elect to be certified for only one method and there is no reason to believe this situation will change.

Even if some small laboratories elect to seek certification for more than one method for some analytes, EPA has concluded that less than 24 small laboratories (1% of the total) will elect to do so. The consequent economic impact on small government laboratories would only be the annual cost of an additional PE analysis for the additional method of their choosing which could run as much as \$100 or as little as \$10 per laboratory. The cost per laboratory depends on the complexity of the additional method for which the laboratory chooses to be certified.

The requirement to hold samples at 10 °C during transit/storage under the Surface Water Treatment Rule is not expected to cause any significant increase in monitoring cost for small water systems. The requirement will affect only a selected number of small systems. The requirement to hold total and fecal coliform samples at 10 °C during transit/storage will affect only systems which use surface water and do not filter. Distribution system samples collected for the analysis of heterotrophic bacteria [measured as heterotrophic plate count (HPC)] are also required to be held at 10 °C during transit/storage. However, the analysis of heterotrophic bacteria is an optional substitute for maintaining a detectable disinfection residual. The requirement to hold samples below 10 °C can be easily met by shipping samples in reusable ice packs. EPA estimates a one time cost of less than \$5 per sample for the ice packs; over a period of time this represents only a slight increase in sample shipping cost under current requirements.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not

apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. Thus, today's rule is not subject to the requirements of sections 202 and 205 of the UMRA.

The rule approves use of additional analytical methods by systems conducting analysis for contaminants in drinking water and thus provides operational flexibility to the system. Any mandate to use a standardized testing procedure for a particular contaminant was established by EPA in an earlier rulemaking. Today's rule merely allows additional standardized procedures. Although, the rule withdraws earlier outdated versions of some methods, EPA anticipates no increase in expenditure or burden on the testing laboratories because newer methods are easier and more efficient to use. Thus, no increase in expenditure or burden on the laboratories' client public water systems is expected.

The rule also approves six methods for magnesium for use under the Stage 1 DBP Rule. Currently there are no EPA approved methods for magnesium, though earlier rulemaking established the need for standardized testing (in order to avoid other requirements). The methods will allow certain systems using softening that are unable to meet the specified level of total organic carbon removal to analyze for magnesium as one of several alternative performance criteria. EPA estimates that the cost of a magnesium analysis should not exceed \$20 per sample; systems analyzing magnesium under the DBP Rule will be required to collect 24

samples per year, which will cost no more than $\$20 \times 24 = \480 per year. EPA believes that less than 1% of the 1,395 surface water systems covered by the DBP Rule will choose to monitor for magnesium as one of several criteria. As noted earlier, however, today's rule did not establish a new requirement for standardized testing of magnesium. That requirement was established in earlier rulemaking (though EPA neglected to specify acceptable standardized procedures at that time).

Today's rule affects laboratory testing requirements in ways other than approval of additional standardized test procedures. Some of these changes impose Federal mandates, but the effect of the new mandate will be well below \$100 millions dollars in any one year. Today's rule authorizes changes to the composition of Performance Evaluation (PE) samples, requires yearly analysis of PE samples, establishes a requirement that laboratories be certified based on the proficiency with the method they actually use, and establishes a temperature requirement for certain samples prior to testing. The cost of PE program should decrease because the testing laboratories have to analyze for fewer analytes. The authorized changes to PE sample composition may actually decrease the burden associated with existing mandates.

Requiring PE sample analysis once a year will not adversely affect the systems because all States that conduct laboratory certification programs currently require yearly PE sample analysis. Today's rulemaking merely formalizes this national consistency among the States.

The amendment requiring that laboratories be certified based on the proficiency on the method they actually use to report the compliance data will impose a minor requirement for laboratories that choose to be certified for an analyte by more than one method. Previously, laboratories could satisfy PE testing requirement using any approved method regardless of the method actually used. Today's action merely codifies the common sense intention that laboratories establish proficiency with the methods they actually use. Though the requirement to establish proficiency now mandates use of the method actually used for compliance testing, EPA believes the potential incremental cost of an extra PE sample analysis is small, manageable and reasonable, and justified by the need to ensure that a laboratory is qualified to report data with each method. Currently most laboratories elect to be certified by the one method that they routinely use. There is no reason to believe

laboratories will be compelled to incur the cost of an additional PE sample in the future.

The requirement to hold source water samples below 10 °C during transit/storage under the Surface Water Treatment Rule will affect only a small fraction (1–9%) of the water utilities. The effect on monitoring cost will be very minor, and attributable to a slight increase in sample shipping cost. Therefore, the mandate associated with the sample holding temperature should be insignificant.

EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. The requirements will not be significant according to the information presented in the previous discussion of the Regulatory Flexibility Act. The requirements will not be unique because large and small governments would be affected the same way. Thus today's rule is not subject to the requirements of section 203 of the UMRA.

D. Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq., EPA must submit an information collection request covering information collection requirements in a rule to the Office of Management and Budget (OMB) for review and approval. This rule does not contain any information collection requirements, and therefore is not subject to the Paperwork Reduction Act.

E. Science Advisory Board and National Drinking Water Advisory Council, and Secretary of Health and Human Services

In accordance with Section 1412 (d) and (e) of the SDWA, the Agency submitted all three rules in the proposal phase to the Science Advisory Board, the National Drinking Water Advisory Council, and the Secretary of Health and Human Services for their review. They had no comments.

F. National Technology Transfer and Advancement Act

As noted in the proposed rule, Section 12(d) of the National Technology Transfer and Advancement Act of 1995 ("NTTAA"), Public Law No. 104–113, Section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or

adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This rulemaking involves technical standards. EPA is approving new versions of ASTM and Standard Methods for many regulated drinking water contaminants. ASTM and SM are both voluntary consensus standard bodies responsible for promoting adoption of uniform and efficient methods for analysis. In addition, EPA conducted a search to identify applicable consensus standards that would be acceptable for compliance determinations under the SDWA for the measurement of Diquat, six acid herbicides, magnesium, and lead and is approving consensus methods whenever possible. EPA identified two methods (ASTM D 5317–93 and SM 6640 B) for the acid herbicides. EPA is approving ASTM Method D 5317–93 for acid herbicides but decided not to use SM 6640 B in this rulemaking. The use of this voluntary consensus standard would have been impractical with applicable law because of significant shortcomings in the sample preparation and quality control sections of the method instructions. The Stage 1 DBP disinfection by-products final rule allows systems to demonstrate compliance with a total organic carbon removal requirement by demonstrating the removal of magnesium from the water supply. In today's rule, EPA has approved five voluntary consensus standards, SM 3500–Mg versions B, C, and E; ASTM D 511–93 versions A and B, for determination of magnesium. These methods have the sensitivity and precision necessary to determine magnesium removal at the levels specified in the Stage 1 DBP rule.

EPA identified no voluntary consensus standards for Diquat, and none were brought to the Agency's attention in comments. Therefore, EPA has decided to use EPA Method 549.2. A commenter recommended that EPA include thallium as an approved analyte in SM 3113 B. While SM 3113 B lists thallium in the potential analytical scope, the method does not contain accuracy and precision statistical data for determinations of thallium. The Agency does not have and the commenter did not provide the sensitivity, accuracy and precision statistical data the Agency would need to approve this technique for compliance determinations of thallium. Therefore, EPA decided not to include thallium in this rulemaking. A commenter recommended that the

Agency approve a voluntary consensus standard (SM 3130 B) for lead, because the commenter believes it is equivalent to the Palintest Method 1001 that is approved in today's rule. EPA reviewed SM 3130 B and concluded that it is not equivalent to the technique used in Method 1001, and the performance data in the method are not complete enough for the Agency to determine whether SM 3130 B would produce results equivalent to Method 1001 or to other methods approved for determinations of lead.

G. Executive Order 13045—Protection of Children From Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997)

Executive Order 13045 applies to any rule that: (1) Is determined to be "economically significant" as defined under E.O. 12866, and (2) Concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency. This rule is not subject to Executive Order 13045 because it is not an "economically significant" rule as defined under E.O. 12866.

H. Executive Order 13132 (Federalism)

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the proposed regulation. EPA also may not issue a regulation that has federalism

implications and that preempts State law unless the Agency consults with State and local officials early in the process of developing the proposed regulation.

If EPA complies by consulting, Executive Order 13132 requires EPA to provide to the Office of Management and Budget (OMB), in a separately identified section of the preamble to the rule, a federalism summary impact statement (FSIS). The FSIS must include a description of the extent of EPA's prior consultation with State and local officials, a summary of the nature of their concerns and the agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of State and local officials have been met. Also, when EPA transmits a draft final rule with federalism implications to OMB for review pursuant to Executive Order 12866, EPA must include a certification from the agency's Federalism Official stating that EPA has met the requirements of Executive Order 13132 in a meaningful and timely manner.

Today's final rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Today's rule approves new and revised versions of currently approved EPA Methods, ASTM Methods and Standard Methods for measurement of compliance with drinking water standards. This rule also provides public water systems, many of which are owned or operated by political subdivisions of States, with additional options for detection of total coliforms and *E. coli* in drinking water under the Total Coliform Rule and source water under the Surface Water Treatment Rule, as well as for measurement of magnesium under the DBP Rule, and for measurement of lead under the Lead and Copper rule. Though public water systems may be owned or operated by political subdivisions of States, the additional measurement flexibility afforded by today's rule will in no way affect the allocation of responsibilities among various levels of government.

This rule also made minor technical corrections, amendments, or clarifications to the regulations and laboratory certification requirements. Laboratories conducting analysis for contaminants in drinking water are required to be certified for proficiency in the analytical method they actually use for drinking water compliance monitoring. Thus, in the case of

laboratories that choose to be certified for an analyte using more than one approved method, the regulation will require such laboratories to analyze a PE sample for each method for which certification is requested. Today's rule also requires that source water samples be held at 10°C during transit/storage under the Surface Water Treatment Rule. For government laboratories that will be affected by this rule, the affect will not have federalism implications because the rule will not impose substantial direct compliance costs, nor will it affect existing relationships between the national government and the States, nor will it affect the distribution of powers and responsibilities among the various levels of government. Thus, the requirements of section 6 of the Executive Order do not apply to this rule.

I. Executive Order 13084—Consultation and Coordination With Indian Tribal Governments

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to the Office of Management and Budget, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected officials and other representatives of Indian tribal governments "to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities."

Today's rule does not significantly or uniquely affect the communities of Indian tribal governments. EPA's promulgation of analytical methods is authorized under section 1401(1)(D) and 1445(a) of the Safe Drinking Water Act. This rule approves new and updated analytical methods for drinking water compliance monitoring and makes method related corrections and amendments in the regulations. The

choice of new and updated analytical methods will actually save compliance cost as newer methods are more efficient and easier to use. Methods related corrections and amendments may cause a small increase in compliance cost but the increase will be very minor as discussed in the preamble. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this rule.

J. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective January 3, 2000.

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Available from U.S. Environmental Protection Agency, National Exposure Research Laboratory (NERL)-Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268.

EPA 1997b. *Manual for the Certification of Laboratories Analyzing Drinking Water*, Fourth Edition, Office of Water Resource Center (RC-4100), 401 M. Street SW, Washington, D.C. 20460, EPA/81/B–97/001, March 1997.

NY 1996. Suffolk County Water Authority 1996. Data Package pertaining to EPA Method 508.1 and the use of a NP detector. Suffolk County Water Authority Laboratory, 260 Motor Parkway, P.O. Box 18043, Hauppauge, New York 11788–8843.

Palintest 1999. Method 1001: Lead in Drinking Water by Differential Pulse Anodic Stripping Voltammetry, August 1999. Palintest, LTD, 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY 41018.

USGS 1989. Methods I–3720–85, I–3300–85, I–1030–85, I–1601–85, I–2598–85, I–1700–85 and I–2700–85 in *Techniques of Water Resources Investigations of the U.S. Geological Survey*, Book 5, Chapter A–1, 3rd ed., 1989, U.S. Geological Survey (USGS) Information Services, Box 25286, Federal Center, Denver, CO 80225–0425.

USGS 1993. Method I–2601–90 in *Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments*, Open File Report 93–125, 1993, U.S. Geological Survey (USGS) Information Services, Box 25286, Federal Center, Denver, CO 80225–0425.

Williams 1979. Williams, T. J, et al., "An Evaluation of the Need for Preserving Potable Water Samples for Nitrate Testing", *JAWWA*, March 1979, pp. 157–160.

List of Subjects

40 CFR Part 141

Environmental protection, Chemicals, Incorporation by reference, Indian-lands, Intergovernmental relations, Reporting and recordkeeping requirements, Water supply.

40 CFR Part 143

Environmental protection, Chemicals, Incorporation by reference, Indian-lands, Water supply.

Dated: November 22, 1999.

Carol M. Browner,
Administrator.

For the reasons set out in the preamble, title 40, chapter I of Code of Federal Regulations, are amended 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. Section 141.21 is amended by:

- a. Revising paragraph (f)(3);
- b. Revising the next to last sentence of paragraph (f)(5);
- c. Revising the second sentence of paragraph (f)(6)(i);
- d. Revising the second sentence of paragraph (f)(6)(ii);
- e. Adding paragraphs (f)(6)(v), (f)(6)(vi) and (f)(6)(vii); and
- f. Revising the second sentence of paragraph (f)(8).

The revisions and additions read as follows:

§ 141.21 Coliform sampling.

* * * * *

(f) * * *

(3) Public water systems must conduct total coliform analyses in accordance with one of the analytical methods in the following table.

Organism	Methodology ¹²	Citation ¹
Total Coliforms ² .	Total Coliform Fermentation Technique ^{3,4,5} .	9221A, B
	Total Coliform Membrane Filter Technique ⁶	9222 A, B, C
	Presence-Absence (P-A) Coliform Test ^{5,7}	9221
	ONPG-MUG Test ⁸	9223
	Colisure Test ⁹	
	E*Colite [®] Test ¹⁰	
	m-ColiBlue24 [®] Test ¹¹	

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents listed in footnotes 1, 6, 8, 9, 10 and 11 was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, D.C. 20460 (Telephone: 202-260-3027); or at the Office of FEDERAL REGISTER, 800 North Capitol Street, NW, Suite 700, Washington, D.C. 20408.

¹ Methods 9221 A, B; 9222 A, B, C; 9221 D and 9223 are contained in *Standard Methods for the Examination of Water and Wastewater*, 18th edition (1992) and 19th edition (1995) American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005; either edition may be used.

Contaminant and methodology ¹³	EPA	ASTM ³	SM ⁴	Other
Alkalinity:				
Titrimetric		D1067-92B	2320 B	I-1030-85 ⁵
Electrometric titration				
Antimony:				
ICP-Mass Spectrometry	² 200.8			
Hydride-Atomic Absorption		D-3697-92		
Atomic Absorption; Platform	² 200.9			
Atomic Absorption; Furnace			3113 B	
Arsenic ¹⁴ :				

²The time from sample collection to initiation of analysis may not exceed 30 hours. Systems are encouraged but not required to hold samples below 10 °C during transit.

³Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate and false-negative rate for total coliform, using lactose broth, is less than 10 percent.

⁴If inverted tubes are used to detect gas production, the media should cover these tubes at least one-half to two-thirds after the sample is added.

⁵No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes.

⁶MI agar also may be used. Preparation and use of MI agar is set forth in the article, "New medium for the simultaneous detection of total coliform and *Escherichia coli* in water" by Brenner, K.P., et al., 1993, *Appl. Environ. Microbiol.* 59:3534-3544. Also available from the Office of Water Resource Center (RC-4100), 401 M. Street SW, Washington, D.C. 20460, EPA/600/J-99/225.

⁷Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.

⁸The ONPG-MUG Test is also known as the Autoanalysis Colilert System.

⁹A description of the Colisure Test, Feb 28, 1994, may be obtained from IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092. The Colisure Test may be read after an incubation time of 24 hours.

¹⁰A description of the E*Colite[®] Test, "Presence/Absence for Coliforms and *E. Coli* in Water," Dec 21, 1997, is available from Charm Sciences, Inc., 36 Franklin Street, Malden, MA 02148-4120.

¹¹A description of the m-ColiBlue24[®] Test, Aug 17, 1999, is available from the Hach Company, 100 Dayton Avenue, Ames, IA 50010.

¹²EPA strongly recommends that laboratories evaluate the false-positive and negative rates for the method(s) they use for monitoring total coliforms. EPA also encourages laboratories to establish false-positive and false-negative rates within their own laboratory and sample matrix (drinking water or source water) with the intent that if the method they choose has an unacceptable false-positive or negative rate, another method can be used. The Agency suggests that laboratories perform these studies on a minimum of 5% of all total coliform-positive samples, except for those methods where verification/confirmation is already required, e.g., the M-Endo and LES Endo Membrane Filter Tests, Standard Total Coliform Fermentation Technique, and Presence-Absence Coliform Test. Methods for establishing false-positive and negative-rates may be based on lactose fermentation, the rapid test for β-galactosidase and cytochrome oxidase, multi-test identification systems, or equivalent confirmation tests. False-positive and false-negative information is often available in published studies and/or from the manufacturer(s).

* * * * *

(5) * * * The preparation of EC medium is described in Method 9221E (paragraph 1a) in *Standard Methods for the Examination of Water and Wastewater*, 18th edition, 1992 and in the 19th edition, 1995; either edition may be used. * * *

(6) * * *

(i) * * * EC medium is described in Method 9221 E as referenced in paragraph (f)(5) of this section. * * *

(ii) * * * Nutrient Agar is described in Method 9221 B (paragraph 3) in *Standard Methods for the Examination of Water and Wastewater*, 18th edition, 1992 and in the 19th edition, 1995; either edition may be used. * * *

* * * * *

(v) The membrane filter method with MI agar, a description of which is cited in footnote 6 to the table in paragraph (f)(3) of this section.

(vi) E*Colite[®] Test, a description of which is cited in footnote 10 to the table at paragraph (f)(3) of this section.

(vii) m-ColiBlue24[®] Test, a description of which is cited in footnote 11 to the table in paragraph (f)(3) of this section.

* * * * *

(8) * * * Copies of the analytical methods cited in *Standard Methods for the Examination of Water and Wastewater* (18th and 19th editions) may be obtained from the American Public Health Association *et al.*; 1015 Fifteenth Street NW., Washington, DC 20005. * * *

* * * * *

3. Section 141.23 is amended by:

- a. Revising paragraph (a)(4)(iii);
- b. Revising the table and footnotes in paragraph (k)(1);
- c. Revising paragraph (k)(2) including the table;
- d. Revising paragraph (k)(3)(i); and
- e. Revising paragraph (k)(3)(ii) introductory text.

The revisions read as follows:

§ 141.23 Inorganic chemical sampling and analytical requirements.

* * * * *

(a) * * *

(4) * * *

(iii) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the State within 14 days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

* * * * *

(k) * * *

(1) * * *

Contaminant and methodology ¹³	EPA	ASTM ³	SM ⁴	Other
Inductively Coupled Plasma	² 200.7		3120 B	
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Platform	² 200.9			
Atomic Absorption; Furnace		D-2972-93C	3113 B	
Hydride Atomic Absorption		D-2972-93B	3114 B	
Asbestos:				
Transmission Electron Microscopy	⁹ 100.1			
Transmission Electron Microscopy	¹⁰ 100.2			
Barium:				
Inductively Coupled Plasma	² 200.7		3120 B	
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Direct			3111 D	
Atomic Absorption; Furnace			3113 B	
Beryllium:				
Inductively Coupled Plasma	² 200.7		3120 B	
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Platform	² 200.9			
Atomic Absorption; Furnace		D3645-93B	3113 B	
Cadmium:				
Inductively Coupled Plasma	² 200.7			
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Platform	² 200.9			
Atomic Absorption; Furnace			3113 B	
Calcium:				
EDTA titrimetric		D511-93A	3500-Ca D	
Atomic absorption; direct aspiration		D511-93B	3111 B	
Inductively-coupled plasma	² 200.7		3120 B	
Chromium:				
Inductively Coupled Plasma	² 200.7		3120 B	
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Platform	² 200.9			
Atomic Absorption; Furnace			3113 B	
Copper:				
Atomic absorption; furnace		D1688-95C	3113 B	
Atomic absorption; direct aspiration		D1688-95A	3111 B	
ICP	² 200.7		3120 B	
ICP—Mass spectrometry	² 200.8			
Atomic absorption; platform	² 200.9			
Conductivity Conductance		D1125-95A	2510 B	
Cyanide:				
Manual Distillation followed by		D2036-91A	4500-CN ⁻ C	
Spectrophotometric, Amenable		D2036-91B	4500-CN ⁻ G	
Spectrophotometric.				
Manual		D2036-91A	4500-CN ⁻ E	I-3300-85 ⁵
Semi-automated	⁶ 335.4			
Selective Electrode			4500-CN ⁻ F	
Fluoride:				
Ion Chromatography	⁶ 300.0	D4327-91	4110 B	
Manual Distill.; Color. SPADNS			4500-F ⁻ B, D	
Manual Electrode		D1179-93B	4500-F ⁻ C	
Automated Electrode				380-75WE ¹¹
Automated Alizarin			4500-F ⁻ E	129-71W ¹¹
Lead:				
Atomic absorption; furnace		D3559-95D	3113 B	
ICP-Mass spectrometry	² 200.8			
Atomic absorption; platform	² 200.9			
Differential Pulse Anodic Stripping Voltammetry				Method 1001 ¹⁵
Magnesium:				
Atomic Absorption		D 511-93 B	3111 B	
ICP	² 200.7		3120 B	
Complexation Titrimetric Methods		D 511-93 A	3500-Mg E	
Mercury:				
Manual, Cold Vapor	² 245.1	D3223-91	3112 B	
Automated, Cold Vapor	¹ 245.2			
ICP-Mass Spectrometry	² 200.8			
Nickel:				
Inductively Coupled Plasma	² 200.7		3120 B	
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Platform	² 200.9			
Atomic Absorption; Direct			3111 B	
Atomic Absorption; Furnace			3113 B	
Nitrate:				
Ion Chromatography	⁶ 300.0	D4327-91	4110 B	B-1011 ⁸
Automated Cadmium Reduction	⁶ 353.2	D3867-90A	4500-NO ₃ ⁻ F	

Contaminant and methodology ¹³	EPA	ASTM ³	SM ⁴	Other
Ion Selective Electrode			4500-NO ₃ - D	601 ⁷
Manual Cadmium Reduction		D3867-90B	4500-NO ₃ - E	
Nitrite:				
Ion Chromatography	⁶ 300.0	D4327-91	4110 B	B-1011 ⁸
Automated Cadmium Reduction	⁶ 353.2	D3867-90A	4500-NO ₃ - F	
Manual Cadmium Reduction		D3867-90B	4500-NO ₃ - E	
Spectrophotometric			4500-NO ₂ - B	
Orthophosphate: ¹²				
Colorimetric, automated, ascorbic acid	⁶ 365.1		4500-P F	
Colorimetric, ascorbic acid, single reagent		D515-88A	4500-P E	
Colorimetric, phosphomolybdate;				I-1602-85 ⁵
automated-segmented flow;				I-2601-90 ⁵
automated discrete				I-2598-85 ⁵
Ion Chromatography	⁶ 300.0	D4327-91	4110 B	
pH: Electrometric	¹ 150.1	D1293-95	4500-H ⁺ B	
	¹ 150.2			
Selenium:				
Hydride-Atomic Absorption		D3859-93A	3114 B	
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Platform	² 200.9			
Atomic Absorption; Furnace		D3859-93B	3113 B	
Silica:				
Colorimetric, molybdate blue;				I-1700-85 ⁵
automated-segmented flow				I-2700-85 ⁵
Colorimetric		D859-95		
Molybdosilicate			4500-Si D	
Heteropoly blue			4500-Si E	
Automated method for molybdate-reactive silica			4500-Si F	
Inductively-coupled plasma	³ 200.7		3120 B	
Sodium:				
Inductively-coupled plasma	² 200.7			
Atomic Absorption; direct aspiration			3111 B	
Temperature: Thermometric			2550	
Thallium:				
ICP-Mass Spectrometry	² 200.8			
Atomic Absorption; Platform	² 200.9			

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents listed in footnotes 1-11 and 15 was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

¹ "Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79/020, March 1983. Available at NTIS, PB84-128677.
² "Methods for the Determination of Metals in Environmental Samples—Supplement I", EPA/600/R-94/111, May 1994. Available at NTIS, PB95-125472.

³ *Annual Book of ASTM Standards*, 1994 and 1996, Vols. 11.01 and 11.02, American Society for Testing and Materials. The previous versions of D1688-95A, D1688-95C (copper), D3559-95D (lead), D1293-95 (pH), D1125-91A (conductivity) and D859-94 (silica) are also approved. These previous versions D1688-90A, C; D3559-90D, D1293-84, D1125-91A and D859-88, respectively are located in the *Annual Book of ASTM Standards*, 1994, Vols. 11.01. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

⁴ 18th and 19th editions of *Standard Methods for the Examination of Water and Wastewater*, 1992 and 1995, respectively, American Public Health Association; either edition may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.

⁵ Method I-2601-90, *Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments*, Open File Report 93-125, 1993; For Methods I-1030-85; I-1601-85; I-1700-85; I-2598-85; I-2700-85; and I-3300-85 See *Techniques of Water Resources Investigation of the U.S. Geological Survey*, Book 5, Chapter A-1, 3rd ed., 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

⁶ "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA/600/R-93/100, August 1993. Available at NTIS, PB94-120821.

⁷ The procedure shall be done in accordance with the Technical Bulletin 601 "Standard Method of Test for Nitrate in Drinking Water", July 1994, PN 221890-001, Analytical Technology, Inc. Copies may be obtained from ATI Orion, 529 Main Street, Boston, MA 02129.

⁸ Method B-1011, "Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography," August 1987. Copies may be obtained from Waters Corporation, Technical Services Division, 34 Maple Street, Milford, MA 01757.

⁹ Method 100.1, "Analytical Method For Determination of Asbestos Fibers in Water", EPA/600/4-83/043, EPA, September 1983. Available at NTIS, PB83-260471.

¹⁰ 10 Method 100.2, "Determination of Asbestos Structure Over 10-µm In Length In Drinking Water", EPA/600/R-94/134, June 1994. Available at NTIS, PB94-201902.

¹¹ Industrial Method No. 129-71W, "Fluoride in Water and Wastewater", December 1972, and Method No. 380-75WE, "Fluoride in Water and Wastewater", February 1976, Technicon Industrial Systems. Copies may be obtained from Bran & Luebbe, 1025 Busch Parkway, Buffalo Grove, IL 60089.

¹² Unfiltered, no digestion or hydrolysis.

¹³ Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2X preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium and arsenic by Method 200.7, and arsenic by Method 3120 B sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113 B; and lead by Method D3559-90D unless multiple in-furnace depositions are made.

Contaminant and methodology ¹³	EPA	ASTM ³	SM ⁴	Other
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¹⁴ If ultrasonic nebulization is used in the determination of arsenic by Methods 200.7, 200.8, or SM 3120 B, the arsenic must be in the pentavalent state to provide uniform signal response. For methods 200.7 and 3120 B, both samples and standards must be diluted in the same mixed acid matrix concentration of nitric and hydrochloric acid with the addition of 100 µL of 30% hydrogen peroxide per 100ml of solution. For direct analysis of arsenic with method 200.8 using ultrasonic nebulization, samples and standards must contain one mg/L of sodium hypochlorite.

¹⁵ The description for Method Number 1001 for lead is available from Palintest, LTD, 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY 41018. Or from the Hach Company, P.O. Box 389, Loveland, CO 8053.

(2) Sample collection for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium under this section shall be conducted using the sample preservation, container, and maximum holding time procedures specified in the following table:

Contaminant	Preservative ¹	Container ²	Time ³
Antimony	HNO ₃	P or G	6 months
Asbestos	4°C	P or G	48 hours ⁴
Barium	HNO ₃	P or G	6 months
Beryllium	HNO ₃	P or G	6 months
Cadmium	HNO ₃	P or G	6 months
Chromium	HNO ₃	P or G	6 months
Cyanide	4°C, NaOH	P or G	14 days
Fluoride	None	P or G	1 month
Mercury	HNO ₃	P or G	28 days
Nickel	HNO ₃	P or G	6 months
Nitrate	4°C	P or G	48 hours ⁵
Nitrate-Nitrite ⁶	H ₂ SO ₄	P or G	28 days
Nitrite	4°C	P or G	48 hours
Selenium	HNO ₃	P or G	6 months
Thallium	HNO ₃	P or G	6 months

¹ When indicated, samples must be acidified at the time of collection to pH < 2 with concentrated acid or adjusted with sodium hydroxide to pH > 12. When chilling is indicated the sample must be shipped and stored at 4°C or less.

² P=plastic, hard or soft; G=glass, hard or soft.
³ In all cases samples should be analyzed as soon after collection as possible. Follow additional (if any) information on preservation, containers or holding times that is specified in method.

⁴ Instructions for containers, preservation procedures and holding times as specified in Method 100.2 must be adhered to for all compliance analyses including those conducted with Method 100.1.

⁵ If the sample is chlorinated, the holding time for an unacidified sample kept at 4°C is extended to 14 days.

⁶ Nitrate-Nitrite refers to a measurement of total nitrate.

(3) * * *

(i) Analyze Performance Evaluation (PE) samples provided by EPA, the State or by a third party (with the approval of the State or EPA) at least once a year.

(ii) For each contaminant that has been included in the PE sample and for each method for which the laboratory desires certification achieve quantitative results on the analyses that are within the following acceptance limits:

* * * * *

4. Section 141.24 is amended by:

- a. Revising the section heading
- b. Revising paragraph (e);
- c. Revising paragraphs (f)(14)(ii);
- d. Revising paragraphs (f)(17)(i)(A), (f)(17)(i)(B), (f)(17)(ii) introductory text; and paragraph (f)(17)(ii)(A);
- e. Revising paragraph (h)(10)(ii);
- f. Revising paragraph (h)(13) introductory text, (h)(13)(i); and
- g. Revising paragraph (h)(19)(i)(A) and (h)(19)(i)(B) introductory text to read as follows:

§ 141.24 Organic chemicals, sampling and analytical requirements.

* * * * *

(e) Analyses for the contaminants in this section shall be conducted using the following EPA methods or their equivalent as approved by EPA.

(1) The following documents are incorporated by reference. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. Method 508A and 515.1 are in *Methods for the Determination of Organic Compounds in Drinking Water*, EPA/600/4-88-039, December 1988, Revised, July 1991. Methods 547, 550 and 550.1 are in *Methods for the Determination of Organic Compounds in Drinking Water—Supplement I*, EPA/600-4-90-020, July 1990. Methods 548.1, 549.1, 552.1 and 555 are in *Methods for the Determination of Organic Compounds in Drinking Water—Supplement II*, EPA/600/R-92-129, August 1992. Methods 502.2, 504.1, 505, 506, 507, 508, 508.1, 515.2, 524.2 525.2, 531.1, 551.1 and 552.2 are in *Methods for the Determination of Organic Compounds in Drinking Water—Supplement III*, EPA/600/R-95-131, August 1995. Method 1613 is titled "Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS", EPA/821-B-94-005, October 1994. These documents are available from the National Technical Information Service, NTIS PB91-231480, PB91-146027, PB92-207703, PB95-261616 and PB95-104774, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800-553-6847. Method 6651 shall be followed in accordance with *Standard Methods for the Examination of Water and Wastewater*, 18th edition, 1992 and 19th edition, 1995, American Public Health Association (APHA); either edition may be used. Method 6610 shall be followed in accordance with the *Supplement to the 18th edition of Standard Methods for the Examination of Water and Wastewater*, 1994 or with the 19th edition of *Standard Methods*

for the Examination of Water and Wastewater, 1995, APHA; either publication may be used. The APHA documents are available from APHA, 1015 Fifteenth Street NW., Washington, D.C. 20005. Other required analytical test procedures germane to the conduct of these analyses are contained in *Technical Notes on Drinking Water Methods*, EPA/600/R-94-173, October 1994, NTIS PB95-104766. EPA Methods 515.3 and 549.2 are available from U.S. Environmental Protection Agency, National Exposure Research Laboratory (NERL)—Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268. ASTM Method D 5317-93 is available in the *Annual Book of ASTM Standards*, 1996, Vol. 11.02, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428, or in any edition published after 1993.

Contaminant	Method ¹
Benzene	502.2, 524.2
Carbon tetrachloride	502.2, 524.2, 551.1
Chlorobenzene	502.2, 524.2
1,2-Dichlorobenzene	502.2, 524.2
1,4-Dichlorobenzene	502.2, 524.2
1,2-Dichloroethane	502.2, 524.2
cis-Dichloroethylene	502.2, 524.2
trans-Dichloroethylene	502.2, 524.2
Dichloromethane	502.2, 524.2
1,2-Dichloropropane	502.2, 524.2
Ethylbenzene	502.2, 524.2
Styrene	502.2, 524.2
Tetrachloroethylene	502.2, 524.2, 551.1
1,1,1-Trichloroethane	502.2, 524.2, 551.1
Trichloroethylene	502.2, 524.2, 551.1
Toluene	502.2, 524.2
1,2,4-Trichlorobenzene	502.2, 524.2
1,1-Dichloroethylene	502.2, 524.2
1,1,2-Trichloroethane	502.2, 524.2, 551.1
Vinyl chloride	502.2, 524.2
Xylenes (total)	502.2, 524.2
2,3,7,8-TCDD (dioxin)	1613
2,4-D ⁴ (as acid, salts and esters)	515.2, 555, 515.1, 515.3, D5317-93
2,4,5-TP ⁴ (Silvex)	515.2, 555, 515.1, 515.3, D5317-93
Alachlor ²	507, 525.2, 508.1, 505, 551.1
Atrazine ²	507, 525.2, 508.1, 505, 551.1
Benzo(a)pyrene	525.2, 550, 550.1
Carbofuran	531.1, 6610
Chlordane	508, 525.2, 508.1, 505
Dalapon	552.1, 515.1, 552.2, 515.3
Di(2-ethylhexyl)adipate	506, 525.2
Di(2-ethylhexyl)phthalate	506, 525.2
Dibromochloropropane (DBCP)	504.1, 551.1
Dinoseb ⁴	515.2, 555, 515.1, 515.3
Diquat	549.2
Endothall	548.1
Endrin	508, 525.2, 508.1, 505, 551.1
Ethylene dibromide (EDB)	504.1, 551.1
Glyphosate	547, 6651

Contaminant	Method ¹
Heptachlor	508, 525.2, 508.1, 505, 551.1
Heptachlor Epoxide	508, 525.2, 508.1, 505, 551.1
Hexachlorobenzene	508, 525.2, 508.1, 505, 551.1
Hexachlorocyclopentadiene	508, 525.2, 508.1, 505, 551.1
Lindane	508, 525.2, 508.1, 505, 551.1
Methoxychlor	508, 525.2, 508.1, 505, 551.1
Oxamyl	531.1, 6610
PCBs ³ (as decachlorobiphenyl) (as Aroclors)	508A
Pentachlorophenol	508.1, 508, 525.2, 505 515.2, 525.2, 555, 515.1, 515.3, D5317-93
Picloram ⁴	515.2, 555, 515.1, 515.3, D5317-93
Simazine ²	507, 525.2, 508.1, 505, 551.1
Toxaphene	508, 508.1, 525.2, 505
Total Trihalomethanes	502.2, 524.2, 551.1

¹ For previously approved EPA methods which remain available for compliance monitoring until June 1, 2001, see paragraph (e)(2) of this section.

² Substitution of the detector specified in Method 505, 507, 508 or 508.1 for the purpose of achieving lower detection limits is allowed as follows. Either an electron capture or nitrogen phosphorous detector may be used provided all regulatory requirements and quality control criteria are met.

³ PCBs are qualitatively identified as Aroclors and measured for compliance purposes as decachlorobiphenyl. Users of Method 505 may have more difficulty in achieving the required detection limits than users of Methods 508.1, 525.2 or 508.

⁴ Accurate determination of the chlorinated esters requires hydrolysis of the sample as described in EPA Methods 515.1, 515.2, 515.3 and 555, and ASTM Method D 5317-93.

(2) The following EPA methods will remain available for compliance monitoring until June 1, 2001. The following documents are incorporated by reference. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. EPA methods 502.2 Rev. 2.0, 505 Rev. 2.0, 507 Rev. 2.0, 508 Rev. 3.0, 531.1 Rev. 3.0 are in "Methods for the Determination of Organic Compounds in Drinking Water", December 1988, revised July 1991; methods 506 and 551 are in "Methods for the Determination of Organic Compounds in Drinking Water—Supplement I", July 1990; methods 515.2 Rev. 1.0 and 524.2 Rev. 4.0 are in "Methods for the Determination of Organic Compounds in Drinking Water—Supplement II," August 1992; and methods 504.1 Rev. 1.0, 508.1 Rev. 1.0, 525.2 Rev.1.0 are available from US EPA NERL, Cincinnati, OH 45268

(f) * * *

(14) * * *

(ii) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the State within 14 days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

* * * * *

(17) * * *

(i) * * *

(A) Analyze Performance Evaluation (PE) samples provided by EPA, the State, or by a third party (with the approval of the State or EPA) at least once a year by each method for which the laboratory desires certification.

(B) Achieve the quantitative acceptance limits under paragraphs (f)(17)(i)(C) and (D) of this section for at least 80 percent of the regulated organic contaminants included in the PE sample.

* * * * *

(ii) To receive certification to conduct analyses for vinyl chloride, the laboratory must:

(A) Analyze Performance Evaluation (PE) samples provided by EPA, the State, or by a third party (with the approval of the State or EPA) at least once a year by each method for which the laboratory desires certification.

* * * * *

(h) * * *

(10) * * *

(ii) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the State within 14 days after completion of the composite analysis or before the holding time for the initial sample is exceeded whichever is sooner.

* * * * *

(13) Analysis for PCBs shall be conducted as follows using the methods in paragraph (e) of this section:

(i) Each system which monitors for PCBs shall analyze each sample using either Method 508.1, 525.2, 508 or 505. Users of Method 505 may have more difficulty in achieving the required Aroclor detection limits than users of Methods 508.1, 525.2 or 508.

* * * * *

(19) * * *

(i) * * *

(A) Analyze Performance Evaluation (PE) samples provided by EPA, the State, or by a third party (with the approval of the State or EPA) at least once a year by each method for which the laboratory desires certification.

(B) For each contaminant that has been included in the PE sample achieve quantitative results on the analyses that are within the following acceptance limits:

* * * * *

5. Section 141.28 is amended by revising paragraph (a) to read as follows:

§ 141.28 Certified laboratories.

(a) For the purpose of determining compliance with §§ 141.21 through 141.27, 141.30, 141.40, 141.74 and 141.89, samples may be considered only if they have been analyzed by a laboratory certified by the State except that measurements for alkalinity, calcium, conductivity, disinfectant residual, orthophosphate, pH, silica, temperature and turbidity may be performed by any person acceptable to the State.

* * * * *

6. Section 141.74 is amended by revising the first five sentences in paragraph (a) introductory text, the table and footnotes in paragraph (a)(1), and the first and second sentences in paragraph (a)(2) to read as follows:

§ 141.74 Analytical and monitoring requirements.

(a) *Analytical requirements.* Only the analytical method(s) specified in this paragraph, or otherwise approved by EPA, may be used to demonstrate compliance with §§ 141.71, 141.72 and 141.73. Measurements for pH, turbidity, temperature and residual disinfectant concentrations must be conducted by a person approved by the State. Measurement for total coliforms, fecal coliforms and HPC must be conducted by a laboratory certified by the State or EPA to do such analysis. Until laboratory certification criteria are developed for the analysis of fecal coliforms and HPC, any laboratory certified for total coliforms analysis by the State or EPA is deemed certified for fecal coliforms and HPC analysis. The following procedures shall be conducted in accordance with the publications listed in the following section. * * *

(1) * * *

Organism	Methodology	Citation ¹
Total Coliform ²	Total Coliform Fermentation Technique ^{3,4,5}	9221 A, B, C
	Total Coliform Membrane Filter Technique ⁶	9222 A, B, C

Organism	Methodology	Citation ¹
Fecal Coliforms ²	ONPG-MUG Test ⁷	9223
	Fecal Coliform Procedure ⁸	9221 E
	Fecal Coliform Filter Procedure	9222 D
Heterotrophic bacteria ²	Pour Plate Method	9215 B
	Nephelometric Method	2130 B
Turbidity	Nephelometric Method	180.1 ⁹
	Great Lakes Instruments	Method 2 ¹⁰

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents listed in footnotes 1, 6, 7, 9 and 10 was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, D.C. 20460 (Telephone: 202-260-3027); or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, D.C. 20408.

¹ Except where noted, all methods refer to *Standard Methods for the Examination of Water and Wastewater*, 18th edition, 1992 and 19th edition, 1995, American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005; either edition may be used.

² The time from sample collection to initiation of analysis may not exceed 8 hours. Systems must hold samples below 10°C during transit.

³ Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate and false-negative rate for total coliform, using lactose broth, is less than 10 percent.

⁴ Media should cover inverted tubes at least one-half to two-thirds after the sample is added.

⁵ No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes.

⁶ Ml agar also may be used. Preparation and use of Ml agar is set forth in the article, "New medium for the simultaneous detection of total coliform and *Escherichia coli* in water" by Brenner, K.P., et al., 1993, *Appl. Environ. Microbiol.* 59:3534-3544. Also available from the Office of Water Resource Center (RC-4100), 401 M Street SW, Washington, D.C. 20460, EPA 600/J-99/225.

⁷ The ONPG-MUG Test is also known as the Autoanalysis Colilert System.

⁸ A-1 Broth may be held up to three months in a tightly closed screw cap tube at 4°C.

⁹ "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA/600/R-93/100, August 1993. Available at NTIS, PB94-121811.

¹⁰ GLI Method 2, "Turbidity", November 2, 1992, Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, Wisconsin 53223.

(2) Public water systems must measure residual disinfectant concentrations with one of the analytical methods in the following table. The methods are contained in both the 18th and 19th editions of *Standard Methods for the Examination of Water and Wastewater*, 1992 and 1995; either edition may be used. * * *

7. Section 141.89 is amended by revising paragraph (a)(1) introductory text, (a)(1)(i) to read as follows and by removing the semicolon at the end of paragraph (a)(1)(ii)(B) and adding a period in it's place.

§ 141.89 Analytical methods.

(a) * * *

(1) Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be performed by any person acceptable to the State. Analyses under this section for lead and copper shall only be conducted by laboratories that have been certified by EPA or the State. To obtain certification to conduct analyses for lead and copper, laboratories must:

(i) Analyze Performance Evaluation samples, which include lead and copper, provided by or acceptable to EPA or the State at least once a year by

each method for which the laboratory desires certification; and
* * * * *

PART 143—NATIONAL SECONDARY DRINKING WATER REGULATIONS

1. The authority citation for part 143 continues to read as follows:

Authority: 42 U.S.C. 300f *et seq.*

2. Section 143.4 is amended by revising the table and footnotes in paragraph (b) to read as follows:

§ 143.4 Monitoring.

* * * * *
(b) * * *

Contaminant	EPA	ASTM ³	SM ⁴	Other
Aluminum	² 200.7 ² 200.8 ² 200.9		3120 B 3113 B 3111 D	
Chloride	¹ 300.0	D4327-91	4110 B 4500-Cl ⁻ D 4500-Cl ⁻ B	
Color		D512-89B	2120 B 5540 C	
Foaming Agents			3120 B 3111 B 3113 B	
Iron	² 200.7 ² 200.9		3120 B 3111 B 3113 B	
Manganese	² 200.7 ² 200.8 ² 200.9		3120 B 3111 B 3113 B	
Odor			2150 B	
Silver	² 200.7 ² 200.8 ² 200.9		3120 B 3111 B 3113 B	⁵ 1-3720-85
Sulfate	¹ 300.0 ¹ 375.2	D4327-91	4110 B 4500-SO ₄ ²⁻ F 4500-SO ₄ ²⁻ C, D 4500-SO ₄ ²⁻ E	
		D516-90		

Contaminant	EPA	ASTM ³	SM ⁴	Other
TDS		2540 C	
Zinc	² 200.7		3120 B	
	² 200.8		3111 B	

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, DC 20408.

¹"Methods for the Determination of Inorganic Substances in Environmental Samples", EPA/600/R-93-100, August 1993. Available at NTIS, PB94-120821.

²"Methods for the Determination of Metals in Environmental Samples—Supplement I", EPA/600/R-94-111, May 1994. Available at NTIS, PB 95-125472.

³*Annual Book of ASTM Standards*, 1994 and 1996, Vols. 11.01 and 11.02, American Society for Testing and Materials. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

⁴18th and 19th editions of *Standard Methods for the Examination of Water and Wastewater*, 1992 and 1995, American Public Health Association; either edition may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.

⁵Method I-3720-85, *Techniques of Water Resources Investigation of the U.S. Geological Survey*, Book 5, Chapter A-1, 3rd ed., 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

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