ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141 and 143

[WH–FRL–6132–2]

RIN 2040–AC77

National Primary and Secondary Drinking Water Regulations: Analytical Methods for Regulated Drinking Water Contaminants

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule.

SUMMARY: EPA is approving the use of updated versions of previously approved American Society for Testing and Materials (ASTM), Standard Methods for Examination of Water and Wastewater (Standard Methods or SM) and Environmental Protection Agency (EPA) analytical methods for compliance determinations of chemical and microbiological contaminants in drinking water. At the same time, the Agency is withdrawing approval of the previous versions of the 14 EPA methods. Previous versions of the SM and ASTM methods will continue to be approved. The Agency is promulgating these methods as a direct final rule because the Agency does not expect adverse comments and wants to ensure prompt availability of the methods for compliance monitoring. In addition, the Agency is making minor technical corrections or clarifications to the regulations, amending the regulation to change the composition of Performance Evaluation (PE) samples and require successful analysis of PE samples once each year.

DATES: This final rule will become effective without further notice on January 4, 1999, unless EPA receives relevant adverse comment by November 2, 1998.

If the Agency receives such comments, EPA will withdraw this direct final rule before its effective date by publishing a timely withdrawal in the **Federal Register** informing the public the rule will not take effect.

The incorporation by reference of the publications listed in today's rule is approved by the Director of the Federal Register as of January 4, 1999.

In accordance with 40 CFR 23.7, this rule shall be considered final for purposes of judicial review at 1:00 p.m. (Eastern time) on January 15, 1999.

ADDRESSES: Written comments may be submitted either by mail or elecrtronically. Comments may be sent to the W–97–04 Drinking Water Analytical Methods Final Comment Clerk, U.S. Environmental Protection Agency, Water Docket, MC 4101, 401 M Street, SW, Washington, D.C. 20460. Please submit any references cited in your comments. EPA would appreciate an original and 3 copies of your comments and enclosures (including references).

This **Federal Register** document has been placed on the Internet for public review and downloading at the following location: http://www.epa.gov/fedrgstr. The record for this rulemaking has been established under docket number W–97–04. Supporting documents (including references and methods cited in this notice) are available for review at the U.S. 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 9:00 a.m. and 3:30 p.m. Eastern Time for an appointment.

Copies of final methods published by EPA are also available for a nominal cost through the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. NTIS also may be reached at 800–553–6847. 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.

FOR FURTHER INFORMATION CONTACT: Jitendra Saxena, Ph.D., Standards and Risk Management Division, Office of Ground Water and Drinking Water (MC–4607), U.S. Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460, (202) 260–9579. Information may also be obtained from 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 9:00 a.m. to 5:30 p.m. Eastern Time.

For technical information regarding microbiology methods, contact Paul S. Berger, Ph.D., Office of Ground Water and Drinking Water (MC–4607), U.S. Environmental Protection Agency, Washington, D.C. 20460, telephone, (202) 260–3039. For technical information regarding chemistry methods, contact Richard Reding, Ph.D., Office of Ground Water and Drinking Water, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, telephone (513) 569–7961. For a list of Regional Contacts see **SUPPLEMENTARY INFORMATION.**

SUPPLEMENTARY INFORMATION:

Potentially Regulated Entities

EPA Regions, as well as States, Territories, and Tribes 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, but often require the public water systems themselves to conduct such analysis. 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. Therefore, States, Territories, Tribes, and public water systems required to test water samples are potentially regulated by the standardization of testing procedures in this rulemaking. Categories and entities that may ultimately be regulated include:

Category	Examples of potentially regulated entities
State and Territorial Governments and Indian Tribes	States, Territories, and Tribes that analyze water samples on behalf of public water systems required to conduct such analysis; States, Territories, and Tribes that themselves operate public water systems required to conduct analytic monitoring
Industry	Industrial operators of public water systems
Municipalities	Municipal operators of public water systems

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 organization is or would be 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 the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

Regional Contacts

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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 USC 300g–1). NPDWRs apply to public water systems pursuant to SDWA section 1401, 42 USC 300f(1)(A). According to SDWA section 1401(1)(D) of the Act, 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 . . . .'' see 42 USC 300f(1)(D). In addition, SDWA section 1445(a) of the Act authorizes the Administrator to establish regulations for monitoring to assist in determining whether persons are acting in compliance with the requirements of the SDWA see 42 USC 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 USC 300j–9(a).

II. Regulatory Background

EPA has promulgated analytical methods for all currently regulated drinking water contaminants for which it has promulgated MCLs or monitoring requirements. In most cases, the Agency has approved use of more than one analytical method for measurement of a contaminant and laboratories may use any approved method 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 approved methods. In addition, the Agency may withdraw methods that become obsolete or amend other requirements (such as certification requirements) associated with the use of approved methods. EPA takes these actions as quickly as possible after new or revised methods are published.

The most recent actions that included approving new or revised analytical methods were published on December 5, 1994 (59 *FR* 62456); May 14, 1996 (61 *FR* 24353) and on March 5, 1997 (62 *FR* 10168). In these final rules EPA approved use of new methods or modifications of existing methods that EPA believed were as good as, or better than, previously approved methods and test procedures. These rules approved methods for the analysis of chemical, microbiological and radiological contaminants in drinking water samples.

III. Explanation of Today's Action

This rule approves new versions of currently approved Environmental Protection Agency (EPA) methods, American Society for Testing and Materials (ASTM) methods, and Standard Methods for the Examination of Water and Wastewater (Standard Methods or SM) for compliance with drinking water standards and monitoring requirements. Compared to the currently approved versions, the new versions contain primarily editorial or technical changes and other changes that make the methods easier to conduct or safer. The rule only withdraws previously approved versions of EPA methods. Previously approved versions of ASTM and Standard Methods are not withdrawn and laboratories may continue to use them. By today's action, EPA also recommends additional methods for monitoring of chloride and sulfate which are regulated under the National Secondary Drinking Water Regulations. Finally, today's action also corrects method citations and makes other minor technical corrections to the regulations.

The Agency is promulgating these regulatory actions as a ''direct final'' rule. A direct final rulemaking involves publishing of a rule with a delayed effective date as well as a companion proposed rule referencing the direct final rule and inviting public comment. The delayed effective date on the final rule allows for the receipt of relevant adverse comment before the direct final rule goes into effect. If EPA receives relevant adverse comments on the companion proposal on or before November 2, 1998, then EPA will take additional action necessary to respond to those comments prior to the effective date (i.e., withdraw any or all of the actions and proceed with a revised rule based on the companion proposal). EPA has chosen to use the direct final approach for these regulatory actions because the Agency does not expect to receive adverse public comments. Additionally, the procedure allows for the most expeditious implementation possible consistent with the Administrative Procedure Act (APA). If EPA decides to withdraw any or all of the actions, EPA will proceed with a revised rule based on the companion proposal.

A. Approval of Updated Version of Compliance Analytical Methods

The updated versions of previously approved methods discussed in this section contain changes that EPA believes will be considered non-controversial and useful by laboratory personnel and certification officials.

ASTM and Standard Methods

In this direct final rule, EPA is approving revised versions of ASTM methods and Standard methods that are

published respectively in the 1996 *Annual Book of ASTM Standards* [ASTM 1996] and in the 19th edition of *Standard Methods for the Examination of Water and Wastewater* [APHA 1995]. These methods include 6 revised ASTM Methods and 23 revised Standard Methods. EPA is also approving the unchanged versions of 19 ASTM methods and 31 Standard Methods that are published in the 1996 ASTM and 1995 Standard Methods publications. Although these 50 methods are not changed from previous versions, ASTM and Standard Methods reprints the unchanged methods along with the revised methods so that the books include all of the current versions of the chemical and microbiological methods published by the respective organization. Because EPA is not withdrawing approval of the currently approved version of any ASTM or Standard Method, approval of the revised methods via a direct final rulemaking should not have any adverse effect on users. Comments are not being solicited on the unchanged methods.

All 6 of the revised ASTM methods and 11 of the 23 revised Standard Methods contain only editorial changes or minor editorial clarifications. Twelve of the revised Standard Methods contain minor technical clarifications or voluntary but useful options, such as better explanations on conducting a specific step in the method, recommendations for safer handling or disposal of hazardous reagents, and options to use alternative procedures, reagents or equipment. The changes between the old and new versions of the 12 revised Standard Methods are described below.

Twelve of the revised Standard methods include eleven microbiology methods and one turbidity method. The eleven microbiology methods published in the 19th edition of Standard Methods have been extensively rewritten to improve clarity and ease of use. The revised methods are SM 9215B; SM 9221A,B,C,D,E; SM 9222A,B,C,D; and SM 9223. For the convenience of the user, the new versions contain certain steps that presently are only specified in the regulations at 40 CFR 141.21(f). Thus, the new versions eliminate the need to consult the Code of Federal Regulations to obtain directions for conducting certain steps in the analysis, such as use of MUG media in SM 9221E. The revised turbidity method is SM 2130B. Previously, EPA and Standard Methods adopted the same definition for primary standards in turbidity methods. In the 19th edition version of SM 2130B, only formazin polymer is designated as the primary standard reference suspension with all others being designated as secondary standards. This change is discussed in more detail by Posavec [AWWA 1996]. EPA considers this change to be acceptable and approves SM 2130B (19th ed.).

EPA Methods

This section discusses fourteen revised EPA methods, which are published in the manual ''Methods for the Determination of Organic Compounds in Drinking Water Supplement III'' (EPA Supplement III) [EPA 1995]. Previous versions of these methods were approved in final rules published on December 5, 1994 (59 *FR* 62456, the methods rule) and on May 14, 1996 (61 *FR* 24353, the ICR rule). The new versions contain minor corrections, minor technical enhancements and editorial improvements. The new versions also include the mandatory method modifications that were approved in the 1994 methods rule and published in the EPA document ''Technical Notes on Drinking Water Methods'' (Tech Notes) [EPA 1994b]. In the 1994 rule, EPA stated that the modifications in Tech Notes would be placed in the affected method when the method was revised for the next supplement of the manual of organic methods. EPA revised these methods in the August 1995 publication of the revised versions in EPA Supplement III.

Under the Administrative Procedure Act (APA) and SDWA, EPA may approve a new method and withdraw a previously approved method within 30 days and 18 months, respectively, after promulgation of a final rule. The timing of the withdrawal of the older EPA methods should have no adverse effect on laboratories because of the 17 month transition period from the old to the new versions. This overlap in approval and withdrawal dates gives laboratories sufficient time to become certified with the new methods. Because the changes between the new and older versions are minor, EPA expects that States will honor the certification status long enough for laboratories to conveniently change to the new versions even if this should take more than 17 months.

As explained in the introduction to EPA's Supplement III manual, all the methods in EPA Supplement III either have a new revision number or a new method number. New revision numbers for Methods 502.2, 504.1, 505, 506, 507, 508, 508.1, 515.1, 515.2, 524.2, 525.2 and 531.1 indicate a relatively small modification to the method. New method numbers for Methods 551.1 and 552.2 indicate a relatively larger change in the method that significantly enhances the performance of the method. Differences between the previous version and the new version of EPA methods (EPA Supplement III) of each method are described below.

Quality Control Improvements in EPA Methods 505, 506, 507, 508, 515.1, 515.2, 531.1, 551.1 and 552.2

EPA changed the quality control requirements in some EPA Supplement III methods to improve uniformity from EPA method to method and to ensure the quality of the data. For example, the criteria in methods 505, 506, 507, 508, 515.1, 515.2, 531.1, 551.1 and 552.2 for judging the acceptability of analyte recoveries have been changed to put an upper limit on the allowed variability. Without this upper limit the allowed variability, which was based only on the percent relative standard deviation (RSD) of previous recoveries and not a fixed numerical limit, could increase to unacceptable limits if the RSD continued to increase during routine use of the method.

The revised criteria still 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 ±30%) limit is specified in the initial demonstration of capability section of each EPA method. EPA uses the initial demonstration of capability to set a fixed upper limit for analyte recoveries because recoveries should not vary more in routine use than when the method was first validated by the laboratory.

Detector Substitution in EPA Methods 505, 507, 508 and 508.1

EPA Methods 505 and 508.1 measure several regulated analytes. EPA Method 508 measures a subset of these analytes and EPA Method 507 measures the remainder. EPA Methods 505, 508 and 508.1 were developed and validated by EPA only with an electron capture (EC) detector and Method 507 only with a nitrogen-phosphorous (NP) detector. Previous versions of EPA Methods 505, 507 and 508 allowed use of either an EC or NP detector provided the method performance criteria were met. EPA has data [NY 1996] from the Suffolk County Water Authority (a New York laboratory) that demonstrate better sensitivity for simazine, atrazine, alachlor, butachlor and metolachlor using a NP detector with EC Method 508.1 conditions. Because EPA believes interchange of detectors may work under some circumstances for some analytes, in today's rule EPA allows use of either an EC or NP detector in EPA Methods 505, 507, 508 and 508.1

provided all regulatory limits and quality control criteria in the method are met.

Recommendations to Improve Detection Limits in EPA Method 505 and for Total Metals

EPA is recommending the use of alternative approved methods when lower detection limits are needed for contaminants analyzed with EPA Method 505. Although substitution of a NP detector for the EC detector specified in EPA Method 505 will improve detection limits for nitrogen-containing compounds, it will not improve detection of non-nitrogen analytes, such as aroclors. Rather than change the EC detector in EPA Method 505, EPA recommends in a footnote to the table of approved methods at 40 CFR 141.24(e) use of the other approved EPA Methods 508.1, 525.2, 507 and 508. EPA especially recommends use of EPA Method 508.1 when low detection limits are required or when users want to use small volumes of solvent. Reasons for the difference in detection limit performance between EPA Method 505 and the alternate methods are described below.

In 1986 EPA developed EPA Method 505 using the EC detector as an alternative to EPA Methods 507 and 508. A primary advantage of EPA Method 505 was the use of less sample (35 ml compared to 1 L) and less solvent (2 ml of hexane compared to 180 ml of methylene chloride). However, the analyte-to-water sample concentration factor in EPA Methods 507 and 508 of 200:1 is more favorable than the 17.5:1 factor in EPA Method 505. The lower concentration factor means that it is more difficult to obtain low detection limits with EPA Method 505. EPA developed Method 508.1 in 1994 as an alternative to EPA Methods 505, 507 and 508. EPA Method 508.1, through use of solid phase extraction media, combines the advantages of high analyte concentration (1000:1 concentration factor) and small volumes of extraction and rinsing solvents (about 40 ml).

EPA is also specifying how to achieve lower detection limits in the analysis of metals. In footnotes to the table of approved methods at 40 CFR 141.23(k)(1), EPA provides instructions on using various preconcentration techniques to achieve better method sensitivity. EPA used these techniques to determine many of the detection limits that are specified in EPA Methods 200.7, 200.8 and 200.9.

Additional Analytes in EPA Supplement III versions of Methods 508.1, 525.2 and 551.1

EPA Method 508.1, Rev. 1.0 covered many EPA Method 507 and 508 analytes, but not butachlor, PCBs or toxaphene. Based on new data that is published in Rev. 2.0, EPA Method 508.1 now measures butachlor, toxaphene and PCBs (as aroclors). EPA is also publishing data in EPA Method 525.2, Rev. 2.0 that supports approval of this method for Aroclor analysis. EPA Method 551.1, which is replacing EPA Method 551, contains data to support approval of the method for the analysis of fourteen additional contaminants. The new regulated analytes measured by EPA Method 551.1 that were not measured by EPA Method 551 are: 1,1,2-trichloroethane, alachlor, atrazine, endrin, heptachlor, heptachlor epoxide, hexachlorobenzene, hexachlorocyclopentadiene, lindane, methoxychlor and simazine. The new unregulated analytes measured by EPA Method 551.1 are: 1,2,3-trichloropropane, metolachlor and metribuzin.

Other Differences in Currently Approved and EPA Supplement III Versions of EPA Methods

Methods in EPA Supplement III are listed below by method and revision number along with a brief description of some of the changes new to the EPA Supplement III version of the method.

EPA Method 502.2, Rev. 2.1 This method is unchanged from Rev. 2.0 (as modified by Tech Notes) except for minor editorial clarifications and the removal of an option to use single point calibration. This single point calibration option had been carried forward from versions of EPA Method 502 that were developed in the late 1970's when gas chromatographs and data systems were much less advanced than today. EPA Method 502.2 is the only multi-analyte method in which EPA allowed single point calibration exception to method QC requirements. Single point calibration was intended for occasional use when one or two analytes of the sixty analytes failed the continuing calibration check specified in the method and when these analytes were not routinely expected to be a source of drinking water contamination. Under the single point calibration option, if an uncalibrated analyte was detected in a compliance sample, EPA allowed quantitation using a standard very close to the unknown amount.

EPA is removing single point calibration from EPA Method 502.2 because advances in GC technology in the last two decades make it unnecessary. Analytes fall outside the QC criteria of the method less frequently today and when they do, the calibration can be rechecked quickly using modern data systems. It is important to recheck the calibration because, rather than being a random error, the QC failure may indicate that the method detection limit has changed enough to produce false negative results in compliance analyses.

EPA Method 504.1, Rev. 1.1 Other than minor editorial clarifications, this method is unchanged from the previous version of 504.1 (as modified by Tech Notes). The EPA Supplement III version (Rev. 1.1) more clearly states that dibromochloromethane is a commonly occurring drinking water contaminant that can easily be misidentified as ethylene dibromide unless the confirmatory procedures described in the method are adhered to.

EPA Method 505, Rev. 2.1 This method is modified from Rev. 2.0 as described above regarding substitution of a NP detector and some changes in the quality control requirements. The EPA Supplement III version also contains additional instructions on the measurement of multi-component mixtures, such as aroclors.

EPA Methods 506, 515.1, 515.2, 524.2 and 531.1 Other than minor editorial clarifications and the quality control changes discussed above, the EPA Supplement III version of each of these methods is unchanged from the previous version. Data tables in the EPA Supplement III versions of EPA Methods 515.1 and 531.1 are reorganized for clarity and addition of method detection limits.

EPA Method 507, Rev. 2.1 This method is modified from Rev. 2.0 as described above regarding substitution of an EC detector and some changes in the quality control requirements. Data tables are reorganized for clarity and addition of method detection limits.

EPA Method 508, Rev. 3.1 This method was modified from Rev. 3.0 as described above regarding substitution of a NP detector and some changes in the quality control requirements. Rev. 3.1 also contains additional instructions on the measurement of multi-component mixtures, such as aroclors. Data tables are reorganized for clarity and addition of method detection limits.

EPA Method 508.1, Rev. 2.0 This method is modified from Rev. 1.0 as described above regarding substitution with a NP detector and addition of aroclors, butachlor and toxaphene, as analytes. Sample holding times, analyte recoveries and other method performance data were obtained using

the same procedures used in EPA Method 525.2. These procedures include acidification of the sample at the time of collection and use of solid-phase extraction (SPE) media to extract the analytes from the drinking water sample. The analytes in EPA Methods 508.1 and 525.2 with SPE are similar to those measured with EPA Methods 505, 507 and 508, which use liquid-liquid extraction (LLE) to extract the analytes. Although the analytes are similar, only the SPE methods (in both the previous and the EPA Supplement III versions) require that the sample be acidified. Acidification increases the SPE extraction efficiency for some analytes and the holding times for some analytes are longer relative to the LLE methods. EPA develops multi-analyte methods with sample collection and preparation procedures that are appropriate for the entire analyte list. Although acidification may not be necessary to measure every EPA Method 508.1 or 525.2 analyte, EPA did not develop these methods to allow the omission of some sampling or procedural steps for laboratories that analyze only a portion of the method analytes. Thus, EPA continues to require acidification of samples that are analyzed with EPA Methods 508.1 and 525.2 using SPE.

EPA Method 509, Rev. 1.1 This method is a single analyte method for the pesticide metabolite ethylenethiourea (ETU). This method is not proposed in today's rule because there are no drinking water monitoring requirements for ETU. However, EPA recommends this method for use by systems wishing to measure ETU in drinking water samples.

EPA Method 525.2, Rev. 2.0 As discussed above, Rev. 2.0 is modified from Rev. 1.0 to add aroclors as analytes. The method instructions also clarify that the extract holding time is measured from the time of extraction and not from the time of sample collection.

EPA Method 551.1, Rev. 1.0 EPA Method 551.1 is an improvement to EPA Method 551 because it uses a buffer that increases sample holding times from 2 days to 14 days. EPA Method 551.1 was recently approved for ICR monitoring at 40 CFR 141.142 in the 1996 ICR rule (61 *FR* 24383, table 7). It will be approved as a replacement for EPA Method 551 at 40 CFR 141.24(e) for analysis of trihalomethanes and twenty other organic chemicals. Besides the buffer, other differences between EPA Methods 551 (as modified by Tech Notes) and 551.1 include use of surrogate and other quality control standards to improve the precision and accuracy of the method. The QC sections of the method have been changed to accommodate these changes to the method.

EPA Method 552.2, Rev. 1.0 This liquid-liquid extraction (LLE) method was developed as an alternative to EPA Method 552.1, which is a solid phase extraction (SPE) method. EPA Method 552.2 using LLE was approved for measurement of several disinfection by-products in the 1996 ICR rule and in today's rule EPA is approving it for analysis of dalapon. To allow users a choice of either liquid or solid phase extraction EPA is not withdrawing approval of EPA Method 552.1 using SPE.

B. Use of Previous Versions of Compliance Analytical Methods

In the 1994 methods rule (59 FR 62456), EPA approved only one version of each compliance method that was published by ASTM, Standard Methods or EPA. The effective date of this action was July 1, 1996. EPA approved only the 1994 versions because these versions generally contained significant improvements in safety, quality assurance or performance. In today's rule EPA is approving methods that are in the 1996 ASTM Annual Book and in the 19th edition of Standard Methods, but EPA is not withdrawing approval of the currently approved versions which are published in the 1994 ASTM Annual Book and in the 18th edition of Standard Methods. EPA is approving use of the two versions of the same method because the differences between the versions are too minor to require users to purchase new books. Depending on the nature and extent of future revisions, EPA may propose to approve only the most recent versions of methods published by ASTM or the relevant Standard Methods committee.

Previously approved versions of EPA methods will remain available for compliance monitoring until March 3, 2000. The previous versions of EPA methods are 502.2 Rev. 2.0, 505 Rev. 2.0, 507 Rev. 2.0, 508 Rev. 3.0, 515.1 Rev. 4.0, 531.1 Rev. 3.0 found in ''Methods for the Determination of Organic Compounds in Drinking Water'', December 1988, revised July 1991; methods 506 Rev. 1.0 and 551 Rev. 1.0 found 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 found 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 available from US EPA NERL, Cincinnati, OH 45268.

Sources for obtaining copies of the approved versions of compliance methods are listed in the Addresses section at the beginning of this rule, in the References section below and at 40 CFR Parts 141 and 143. Users of the Internet can retrieve information about current EPA methods manuals under the EPA home page at the Internet address: http://www.epa.gov/nerlcwww/methmans.html. This site contains the titles, ordering information with publication numbers, abstracts, tables of contents, and analyte-method cross reference lists for EPA manuals that were published between 1988 and 1995. The cross reference lists are especially helpful because they match alphabetical lists of analytes with the corresponding method(s) of analysis.

C. Technical Corrections and Amendments

Today's action also makes corrections in method citations and minor changes to the regulations. The regulatory changes include corrections or clarification to current requirements for composition of Performance Evaluation (PE) samples, frequency of PE-analysis, sample collection, sample holding times, description of acid herbicides. These technical corrections and amendments are discussed in detail below.

SM 4110B

The citation for SM 4110B in the tables of methods listed at 40 CFR 141.23(k)(1) and 143.3(b) is incorrect for some contaminants. This approved method uses ion chromatography in a chemical suppression mode. In the 1994 methods rule (59 *FR* 62456), EPA inadvertently listed this method as 4110 for some contaminants. The 4110 designation may confuse some readers because it might imply approval of SM 4110C, which is also contained within the SM 4110 citation. EPA has never approved nor intended to approve SM 4110C, which uses ion chromatography in an electronic suppression mode. In today's rule, EPA is correcting all citations to be SM 4110B.

PE Sample Composition

In the future, EPA may elect to make performance evaluation (PE) samples more challenging and lower the costs of the PE program by not including all regulated contaminants in each PE study. This would mean that a laboratory could be required to report whether or not a contaminant was detected in the PE sample and correctly report the concentration of each contaminant that it did detect in the sample. Correct reporting of

concentrations is described and specified in regulations as being within certain ''acceptance limits'' around the true value. EPA would apply the acceptance limits specified in the regulations only if the contaminant has been added to the PE sample, i.e., these limits do not apply for concentrations of zero.

By today's action EPA amends the introduction to the tables of acceptance criteria in the regulations to clarify that EPA may include any number of contaminants in any PE sample. The regulations at § 141.23(k)(3), § 141.24(f)(17) and § 141.24(h)(19) are revised to change ''Achieve . . . results . . .'' to ''For each contaminant that has been included in the sample achieve . . . results . . .''. This amendment means, for example, that although the acceptance limit for nitrate is ±10% at ≥0.4 mg/L, the analyst would not need to achieve this acceptance limit if nitrate is not added to the PE sample and the true value is therefore zero.

Annual PE Requirement

In the State certification of laboratories to measure for a contaminant, EPA has long recommended that the laboratory analyze a PE sample within prescribed acceptance limits for that contaminant. EPA recommends an annual frequency for these tests in the *Manual for the Certification of Laboratories Analyzing Drinking Water* [EPA 1997], though the Agency has not specified a frequency requirement in the related drinking water regulations. All States that conduct laboratory certification programs currently require laboratories to pass these tests at least once a year. EPA believes an annual demonstration is an appropriate requirement. In today's rule, EPA amends the regulations to adopt the universal requirement for laboratories to successfully analyze a PE sample at least once each year. Though not specified in the regulation, the PE sample may be provided by EPA, the State or by a third party with the approval of the State or EPA.

EPA already proposed to include such a requirement in a previous notice at 62 FR 36100 (July 3, 1997). Commenters questioned why EPA proposed PE sample testing once a year, rather than twice a year consistent with proposals under consideration by the National Environmental Laboratory Accreditation Council (NELAC). Today's action and the NELAC proposals are not inconsistent because today's action establishes minimum standards; the NELAC standards would establish higher standards that would be voluntary. NELAC has been considering standards for accreditation of laboratories under the National Environmental Laboratory Accreditation Program (NELAP). NELAP accreditation is voluntary and intended to promote consistency between State accreditation standards for laboratories who operate in more than one State. While EPA encourages states to adopt the NELAC standards, such adoption would also be voluntary. Laboratories conducting analyses in multiple states may strive for compliance with the NELAC standards, such as two annual PE sample analyses. Not all laboratories, however, need to meet such a requirement. Therefore, today's action only requires laboratories to analyze a single PE sample once a year.

Composite Sample Follow-up Reporting Time

The regulations at 40 CFR 141.23(a)(4), 141.24(f)(14) and 141.24(h)(10) specify criteria for when an individual sample collected from a compositing point must be analyzed to confirm the results of the analysis of the composite sample. The confirmatory analysis may be conducted on either a duplicate sample (collected at each compositing point) or on follow-up samples collected later. EPA had intended to allow systems up to 14-days to collect, analyze and report the results of these samples provided the sample holding time is not exceeded. The wording in the regulations at 40 CFR 141.23(a)(4)(iii), 141.24(f)(14)(ii) and (h)(10)(ii), however, has caused confusion and hardship because some States have required some systems to report the results of the analysis of duplicate confirmatory samples within 14-days after the composite sample was collected rather than 14-days after the composite result is obtained. EPA is amending the regulations to clarify that the confirmatory analysis result may be reported up to 14-days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

Sample Collection Procedures for Asbestos and Nitrate

The table at 40 CFR 141.23(k)(2) lists preservation procedures and holding times for several drinking water contaminants. In today's rule, EPA is correcting errors in the table for measurement of asbestos, nitrate and total nitrate (nitrate plus nitrite).

EPA is adding the 48 hour holding time and other instructions for collecting asbestos samples that were inadvertently omitted from the table. These instructions are in one asbestos compliance method (EPA Method 100.2) but not in the other asbestos compliance method. Today's rule changes the regulations to require that the preservation procedures and holding times specified in Method 100.2 apply to all compliance analyses of asbestos.

The regulations (40 CFR 141.23(k)(2)) incorrectly list ''nitrate'' as the analyte of concern in two types of samples: chlorinated drinking water and unchlorinated drinking water to which sulfuric acid (H_2SO_4) has been added as a preservative (see table 1). The correct analyte of concern in both cases is ''total nitrate.'' The preservation procedures and holding times for both entries are also incorrect. Today's rule combines the nitrate entries into one entry for total nitrate, adds an entry for nitrate-only determinations, and specifies correct preservation procedures and sample holding times for nitrate and total nitrate.

The corrected preservation procedures and holding time for nitrate-only and total nitrate determinations are listed below in table 2 and in the regulations of today's rule at 40 CFR 141.23(k)(2). Nitrate and nitrite samples may be held up to 48 hours if kept at 4°C or less. These criteria are identical to those specified for wastewater samples at 40 CFR 136.3(e) and in EPA Method 300.0, which is EPA's most recently developed compliance method for nitrate, nitrite and total nitrate. Total nitrate samples may be held up to 28 days if the sample is acidified. These criteria are identical to the criteria in Method 300.0 but differ from criteria specified in Table II at 40 CFR 136.3(e) in that acidified wastewater samples must be kept at 4°C or less. Because holding time data developed for the currently approved version of EPA Method 300.0 (Rev. 2.1, August 1993) showed acidified drinking water samples to be stable for 28-days when held at ambient temperature, EPA will no longer require chilling of acidified samples collected for determination of total nitrate (nitrate-nitrite) in drinking water. When it is determined that data developed with Method 300.0 on drinking water samples is applicable to samples with biological activity typical of wastewater samples, EPA may amend the wastewater regulations to remove the requirement to chill acidified samples.

Today's rule also adds a footnote to the table at 40 CFR 141.23(k)(2) to explain that analysis of samples disinfected with an oxidant (such as free chlorine, chlorine dioxide or ozone) or in acidified samples can only provide a total nitrate result (footnote 4 in table 2). Nitrate cannot be measured separately

from nitrite in these samples because the acid and most disinfectants will oxidize nitrite to nitrate. Nitrate may only be measured separate from nitrite in samples that have not been acidified and that have not been disinfected or only disinfected with a minimal oxidant, such as chloramine.

TABLE 1.—CURRENT PRESERVATION AND HOLDING TIMES AT 40 CFR 141.23(k)(2)

Contaminant	Preservative [1]	Container [2]	Time [3]
Asbestos	Cool, 4°C	P or G	
Nitrate:			
Chlorinated	Cool, 4°C	P or G	28 days.
Non-chlorinated	Conc H_2SO_4 to pH <2.	P or G	14 days.
Nitrite	Cool, 4°C	P or G	48 hours.

[1] P=plastic, hard or soft; G=glass, hard or soft.
[2] In all cases samples should be analyzed as soon after collection as possible.
[3] See method(s) for the information for preservation.

TABLE 2.—CORRECTED PRESERVATION AND HOLDING TIMES AT 40 CFR 141.23(k)(2)

Contaminant	Preservative[1]	Container[2]	Time[3]
Asbestos	4°C	P or G	48 hours.[6]
Nitrate[4]	4°C	P or G	48 hours.
Nitrate-Nitrite[5]	H_2SO_4	P or G	28 days.
Nitrite[4]	4°C	P or G	48 hours.

[1] When indicated, samples must be acidified at the time of collection to pH < 2 with concentrated acid. 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] Nitrate may only be measured separate from nitrite in samples that have not been acidified and that have not been disinfected or only disinfected with a minimal oxidant, such as chloramine. Measurement of acidified samples or waters disinfected with free chlorine, chlorine dioxide or ozone provides a total nitrate (sum of nitrate plus nitrite) concentration.
[5] Nitrate-Nitrite refers to a measurement of total nitrate. Acidification is not required if total nitrate is determined within 48 hours in a sample held at 4°C or less. However, acidification is required if a sample is to be held for longer than 48 hours because the disinfectant residual may not be maintained.
[6] 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.

Analysis of Acid Herbicides

The herbicide, 2,4-D, is applied as an ester form and not as the acid, 2,4-dichlorophenoxy acetic acid. The MCL for 2,4-D is listed in a table at 40 CFR 141.61(c) with the CAS number, 94–75–7. This CAS number is assigned to the ester, acid and salt forms of 2,4-D. To clarify what is being regulated and analyzed, today's rule changes the description of the contaminant in the table of approved methods at 40 CFR 141.24(e) from ''2,4-D'' to ''2,4-D as acid, salts and esters''. Today's rule also clarifies in the footnotes to this table that ''accurate determination of the chlorinated esters'' of 2,4-D and other regulated acid herbicides ''requires hydrolysis of the sample as described in Methods 515.1, 515.2 and 555.''

D. Recommendation for Additional Methods for Chloride and Sulfate

In view of the fact that National Secondary Drinking Water Regulations are not federally enforceable, EPA only recommends analytical methods for monitoring of secondary contaminants. These methods are recommended at 40 CFR 143.4(b). EPA is aware that some States exercise their prerogative to disallow use of any method that is not listed at 40 CFR 143.4(b). EPA is also aware that titrimetric methods for chloride and turbidimetric methods for sulfate monitoring are specified for wastewater monitoring at 40 CFR 136.3 but not for drinking water at 40 CFR 143.4(b). This discrepancy in approval can increase analytical costs by requiring a laboratory to set up and support different analytical methods for the same contaminant.

Because EPA seeks to eliminate unnecessary hardships, EPA reexamined the available methods for secondary monitoring of sulfate and chloride and compared them to those proposed (60 *FR* 53988, October 18, 1995) or approved at 40 CFR 136.3 (table 1B). Based on this evaluation, today's rule recommends additional methods for chloride and sulfate monitoring.

Today's rule recommends the silver nitrate titrimetric methods SM 4500–Cl–B and ASTM D 512–89B for secondary monitoring of chloride. EPA is not recommending any titrimetric methods for chloride that use mercuric nitrate for drinking water analysis because the method produces a mercury-containing waste that is considered ''hazardous'' under the Resource Conservation Recovery Act (RCRA). This action is consistent with EPA's proposal on July 25, 1995 to withdraw approval of mercuric nitrate methods for monitoring under RCRA (60 *FR* 37976).

Today's rule also recommends two turbidimetric methods, SM 4500–SO_4E and ASTM D516–90, for secondary monitoring of sulfate. Although the ASTM and Standard Method turbidimetric methods for sulfate are similar to EPA Method 375.4, EPA has not and will not recommend the EPA method because EPA Method 375.4 is outdated relative to D516–90 and SM4500–SO_4E. Although recommending turbidimetric methods for sulfate at § 143.4(b) results in approval of these methods for unregulated contaminant monitoring at § 141.40(n)(12), this does not require the Agency to adopt these methods in future rulemakings (if any) on sulfate.

E. Performance-based Measurement System

On October 6, 1997, EPA published a Notice of the Agency's intent to implement a Performance Based

Measurement System (PBMS) in all of its programs to the extent feasible (62 FR 52098). 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. Our expectation is that EPA will publish its PBMS implementation strategy for water programs in the **Federal Register** by the end of calendar year 1998.

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.

IV. 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

Under the Regulatory Flexibility Act (RFA), EPA generally is required to conduct a regulatory flexibility analysis describing the impact of the regulatory action on small entities as part of rulemaking. However, under section 605(b) of the RFA, if EPA certifies that the rule will not have a significant economic impact on a substantial number of small entities, EPA is not required to prepare a regulatory flexibility analysis. Pursuant to section 605(b) of the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Administrator certifies that this rule will not have a significant economic impact on a substantial number of small entities.

The rule approves new versions of currently approved EPA Methods, ASTM Methods and Standard Methods for compliance with drinking water standards and monitoring requirements and is making minor technical corrections or amendments. 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 EPA Methods, however, will be withdrawn after 18 months, but this delayed effective date 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.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub.L. 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 any 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 section 202 and 205 of the UMRA. Today's rule approves use of additional analytical methods by laboratories conducting analysis for contaminants in drinking water and thus provides operational flexibility to laboratory analyst. Although, the rule withdraws earlier versions of some methods, and provides for amendments to change Performance Evaluation sample composition and requires yearly analysis of PE samples, EPA anticipates no increase in expenditure or burden on the testing laboratories, and thus, no increase in expenditure or burden on the laboratories' client public water systems. For example, the differences between the replacement methods and the withdrawn methods are very minor. In fact, the newer versions are easier to use. The cost of the PE program should decrease because the testing laboratories have to analyze for fewer analytes. Requiring PE sample analysis once a year will not adversely affect the testing laboratories because all states that conduct laboratory certification programs currently require yearly PE sample analysis.

In view of the fact that today's rule provides regulatory relief in the form of increased operational flexibility to laboratory analysts, and thus relief to laboratories' client public water

systems, EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. Therefore, today's rule is not subject to section 203 of UMRA.

D. Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1980, 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 contains no collection requirements. Therefore, preparation of an information collection request to accompany this rule is unnecessary.

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 this proposal 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. Submission to Congress and the General Accounting Office

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 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 requirement 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 Resigter**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2). This rule will be effective January 4, 1999.

G. National Technology Transfer and Advancement Act

Under section 12(d) of the National Technology Transfer and Advancement Act, the Agency is directed 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., material specifications, test methods, sampling procedures, business practices, etc.) that are developed or adopted by voluntary consensus standard bodies. Where available and potentially applicable voluntary consensus standards are not used by EPA, the Act requires the Agency to provide Congress, through the Office of Management and Budget (OMB), an explanation for the reasons for not using such standards.

In this rulemaking 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. EPA recognizes that other consensus methods may also be available for the contaminants covered by this rule. In order to expedite publication of this rule EPA has chosen not to perform an exhaustive search for other consensus methods at this time. EPA plans to address the availability of other voluntary consensus methods for these analytes in subsequent rules.

H. Executive Order 13045—Protection of Children From Environmental Health Risks and Safety Risks

Today's action is not subject to Executive Order 13045 [62 FR 19885 (April 23, 1997)], which requires agencies to identify and assess the environmental health and safety risks of their rules on children. Pursuant to the definitions in section 2–202, Executive Order 13045 only applies to rules that are economically significant as defined under Executive Order 12886 and concern an environmental health or safety risk that may disproportionately affect children. This rule is not economically significant and does not concern a risk disproportionately affecting children.

V. References

APHA 1992. Eighteenth edition of *Standard Methods for the Examination of Water and Wastewater,* 1992, American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

APHA 1995. Nineteenth edition of *Standard Methods for the Examination of Water and Wastewater,* 1995, American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

ASTM 1994. *Annual Book of ASTM Standards,* 1994, Vol. 11.01 and 11.02, American Society for Testing and Materials, 101 Barr Harbor Drive, West Conshohocken, PA 19428.

ASTM 1996. *Annual Book of ASTM Standards,* 1996, Vol. 11.01 and 11.02, American Society for Testing and Materials, 101 Barr Harbor Drive, West Conshohocken, PA 19428.

AWWA 1996. ''Standard Methods—A Closer Look'', Posavec, Steve, in *Opflow,* Vol. 22, No.2, February 1996, American Water Works Association, 6666 West Quincy Avenue, Denver, CO 80235.

EPA 1990a. ''Methods for the Determination of Organic Compounds in Drinking Water—Supplement I'', July 1990, NTIS PB91–146027.

EPA 1991. ''Methods for the Determination of Organic Compounds in Drinking Water'', December 1988, revised July 1991, NTIS PB91–231480.

EPA 1992. ''Methods for the Determination of Organic Compounds in Drinking Water—Supplement II,'' August 1992, NTIS PB92–207703.

EPA 1993. ''Methods for the Determination of Inorganic Substances in Environmental Samples'', August 1993, NTIS PB94–120821.

EPA 1994. ''Methods for the Determination of Metals in Environmental Samples—Supplement I'', May 1994, NTIS PB95–125472.

EPA 1994b. *Technical Notes on Drinking Water Methods,* EPA–600/R–94–173, October 1994, NTIS PB95–104766.

EPA 1995. ''Methods for the Determination of Organic Compounds in Drinking Water—Supplement III,'' EPA–600/R–95–131, August 1995, NTIS PB95–261616.

EPA 1997. *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.

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.

List of Subjects

40 CFR Part 141

Environmental protection, Analytical methods, Chemicals, Incorporation by reference, Indians-lands, Intergovernmental relations, Radiation protection, Reporting and recordkeeping requirements, Water supply.

40 CFR Part 143

Environmental protection, Analytical methods, Chemicals, Incorporation by reference, Indians-lands, Water supply.

Dated: July 23, 1998.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, parts 141 and 143 of title 40, 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. 300g, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, and 300j-9.

2. Section 141.21 is amended by revising paragraph (f)(3), revising the next to last sentence of paragraph (f)(5), revising the second sentence of paragraph (f)(6)(i), revising the second sentence of paragraph (f)(6)(ii), and revising the second sentence of paragraph (f)(8) to 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	Citation [1]
Total Coliforms: [2]	Total Coliform Fermentation Technique [3,4,5]	9221A, B.
	Total Coliform Membrane Filter Technique	9222A, B, C.
	Presence-Absence (P–A) Coliform Test [5,6]	9221D
	ONPG-MUG Test [7]	9223.
	Colisure Test [8].	

[1] Methods 9221A, B, 9222A,B,C, 9221D 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.

[2] The 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.

[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 coliforms, using lactose broth, is less than 10 percent.

[4] If 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.

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

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

[7] The ONPG-MUG Test is also known as the Autoanalysis Colilert System. A source for this test is referenced at paragraph (f)(5)(iii) of this section.

[8] The Colisure Test must be incubated for 28 hours before examining the results. If an examination of the results at 28 hours is not convenient, then results may be examined at any time between 28 hours and 48 hours. A description of the Colisure Test may be obtained from the Millipore Corporation, Technical Services Department, 80 Ashby Road, Bedford, MA 01730. The toll-free phone number is (800) 645–5476.

* * * * *

(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 9221E as referenced in paragraph (f)(5) of this section. * * *

(ii) * * * Nutrient Agar is described in Method 9221B (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. * * *

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(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, D.C. 20005. * * *

* * * * *

3. Section 141.23 is amended by revising paragraphs (a)(4)(iii), (k)(2) including the table, (k)(3)(i), (k)(3)(ii) introductory text, and revising the table and footnotes in paragraph (k)(1) to 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 completion of the composite analysis or before the holding time of the initial sample is exceeded whichever is sooner.

* * * * *

(k) * * *

(1) * * *

Contaminant	Methodology [13]	EPA	ASTM [3]	SM [4]	Other
Antimony	ICP-Mass Spectrometry	[2] 200.8			
	Hydride-Atomic Absorption		D–3697–92		
	Atomic Absorption; Platform	[2] 200.9			
	Atomic Absorption; Furnace			3113B	
Arsenic [14]	Inductively Coupled Plasma	[2] 200.7		3120B	
	ICP-Mass Spectrometry	[2] 200.8			
	Atomic Absorption; Platform	[2] 200.9			
	Atomic Absorption; Furnace		D–2972–93C	3113B	
	Hydride Atomic Absorption		D–2972–93B	3114B	
Asbestos	Transmission Electron Microscopy	[9] 100.1			
	Transmission Electron Microscopy	[10] 100.2			
Barium	Inductively Coupled Plasma	[2] 200.7		3120B	
	ICP-Mass Spectrometry	[2] 200.8			

Contaminant	Methodology [13]	EPA	ASTM [3]	SM [4]	Other
	Atomic Absorption; Direct	.....		3111D	
	Atomic Absorption; Furnace	.....		3113B	
Beryllium	Inductively Coupled Plasma	[2] 200.7		3120B	
	ICP-Mass Spectrometry	[2] 200.8			
	Atomic Absorption; Platform	[2] 200.9			
	Atomic Absorption; Furnace	.....	D–3645–93B	3113B	
Cadmium	Inductively Coupled Plasma	[2] 200.7			
	ICP-Mass Spectrometry	[2] 200.8			
	Atomic Absorption; Platform	[2] 200.9			
	Atomic Absorption; Furnace	.....		3113B	
Chromium	Inductively Coupled Plasma	[2] 200.7		3120B	
	ICP-Mass Spectrometry	[2] 200.8			
	Atomic Absorption; Platform	[2] 200.9			
	Atomic Absorption; Furnace	.....		3113B	
Cyanide	Manual Distillation followed by	.....	D2036–91A	4500-CN-C	
	Spectrophotometric, Amenable	.....	D2036–91B	4500CN-G	
	Spectrophotometric:				
	Manual	.....	D2036–91A	4500-CN-E	[5] I–3300–855
	Semi-automated	[6] 335.4			
	Selective Electrode	.....		4500CN-F	
Fluoride	Ion Chromatography	[6] 300.0	D4327–91	4110B	
	Manual Distill.; Color. SPADNS	.....		4500F-B,D	
	Manual Electrode	.....	D1179–93B	4500F-C	
	Automated Electrode	.....			[11] 380–75WE.
	Automated Alizarin	.....		4500F-E	[11] 129–71W.
Mercury	Manual, Cold Vapor	[2] 245.1	D3223–91	3112B	
	Automated, Cold Vapor	[1] 245.2			
	ICP-Mass Spectrometry	[2] 200.8			
Nickel	Inductively Coupled Plasma	[2] 200.7		3120B	
	ICP-Mass Spectrometry	[2] 200.8			
	Atomic Absorption; Platform	[2] 200.9			
	Atomic Absorption; Direct	.....		3111B	
	Atomic Absorption; Furnace	.....		3113B	
Nitrate	Ion Chromatography	[6] 300.0	D4327–91	4110B	[8] B–1011.
	Automated Cadmium Reduction	[6] 353.2	D3867–90A	4500-NO_3-F	
	Ion Selective Electrode	.....		4500-NO_3-D	[7] 601.
	Manual Cadmium Reduction	.....	D3867–90B	4500-NO_3-E	
Nitrite	Ion Chromatography	[6] 300.0	D4327–91	4110B	[8] B–1011.
	Automated Cadmium Reduction	[6] 353.2	D3867–90A	4500-NO_3-F	
	Manual Cadmium Reduction	.....	D3867–90B	4500-NO_3-E	
	Spectrophotometric	.....		4500-NO_3-B	
Selenium	Hydride-Atomic Absorption	.....	D3859–93A	3114B	
	ICP-Mass Spectrometry	[2] 200.8			
	Atomic Absorption; Platform	[2] 200.9			
	Atomic Absorption; Furnace	.....	D3859–93B	3113B	
Thallium	ICP-Mass Spectrometry	[2] 200.8			
	Atomic Absorption; Platform	[2] 200.9			
Lead	Atomic absorption; furnace	.....	D3559–95D	3113B	
	ICP-Mass spectrometry	[2] 200.8			
	Atomic absorption; platform	[2] 200.9			
Copper	Atomic absorption; furnace	.....	D1688–95C	3113B	
	Atomic absorption; direct aspiration	.....	D1688–95A	3111B	
	ICP	[2] 200.7		3120B	
	ICP—Mass spectrometry	[2] 200.8			
	Atomic absorption; platform	[2] 200.9			
pH	Electrometric	[1] 150.1	D1293–95	4500-H^+-B	
		[1] 150.21			
Conductivity	Conductance	.....	D1125–95A	2510B	
Calcium	EDTA titrimetric	.....	D511–93A	3500-Ca-D	
	Atomic absorption; direct aspiration	.....	D511–93B	3111B	
	Inductively-coupled plasma	[2] 200.7		3120B	
Alkalinity	Titrimetric	.....	D1067–92B	2320B	
	Electrometric titration	.....			[5] I–1030–85.
Ortho-phosphate [12].	Colorimetric, automated, ascorbic acid	[6] 365.1		4500-P-F	
	Colorimetric, ascorbic acid, single reagent	.....	D515–88A	4500-P-E	
	Colorimetric, phosphomolybdate;	.....			[5] I–1601–8.
	automated-segmented flow;	.....			[5] I–2601–90.
	automated discrete	.....			[5] I–2598–85.
	Ion Chromatography	[5] 300.0	D4327–91	4110B	
Silica	Colorimetric, molybdate blue;	.....			
	automated-segmented flow	.....			[5] I–1700–85.
	Colorimetric	.....		D859–94	[5] I–2700–85.
	Molybdosilicate	.....		4500-Si-D	

Contaminant	Methodology [13]	EPA	ASTM [3]	SM [4]	Other
	Heteropoly blue	.....		4500-Si-E	
	Automated method for molybdate-reactive silica	.....		4500-Si-F	
	Inductively-coupled plasma	[2] 200.7		3120B	
Temperature	Thermometric	.....		2550	
Sodium	Inductively-coupled plasma	[2] 200.7			
	Atomic Absorption; direct aspiration	.....		3111B	

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.

[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, PB 95–125472.

[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, 101 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 all other Methods See *Techniques of Water Resources Investigation of the U.S. Geological Survey,* Book 5, Chapter A–1, 3rd ed., 1989, Methods I–1030; I–1601–85; I–1700–85; I–2598–85; I–2700–85; and I–3300–85; 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] 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, PB84–201902.

[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 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 3113B; and lead by Method D3559–90D unless multiple in-furnace depositions are made.

[14] If ultrasonic nebulization is used in the determination of arsenic by Methods 200.7, 200.8, or SM 3120, the arsenic must be in the pentavalent state to provide uniform signal response. For methods 200.7 and 3120, 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.

(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.[6]
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]	4°C	P or G	48 hours.
Nitrate-Nitrite [5]	H_2SO_4	P or G	28 days.
Nitrite [4]	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] Nitrate may only be measured separate from nitrite in samples that have not been acidified and that have not been disinfected or only disinfected with a minimal oxidant, such as chloramine. Measurement of acidified samples or waters disinfected with free chlorine, chlorine dioxide or ozone provides a total nitrate (sum of nitrate plus nitrite) concentration.

[5] Nitrate-Nitrite refers to a measurement of total nitrate. Acidification is not required if total nitrate is determined within 48 hours in a sample held at 4°C or less. However, acidification is required if a sample is to be held for longer than 48 hours because the disinfectant residual may not be maintained.

[6] 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.

(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 achieve quantitative results on the analyses that are within the following acceptance limits:

* * * * *

4. Section 141.24 is amended by revising paragraph (e), revising paragraphs (f)(14)(ii), (f)(17)(i)(A), (f)(17)(i)(B), (f)(17)(ii)(A), (h)(10)(ii), (h)(13) introductory text, (h)(13)(i), (h)(19)(i)(A) and (h)(19)(i)(B) introductory text to read as follows:

§ 141.24 Organic chemicals other than total trihalomethanes, 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 is 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, 515.1, 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, as follows:

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.
2,4,5-TP [4] (Silvex)	515.2, 555, 515.1.
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.

Contaminant	Method [1]
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.
Diquat	549.1.
Endothall	548.1.
Endrin	508, 525.2, 508.1, 505, 551.1.
Ethylene dibromide (EDB)	504.1, 551.1.
Glyphosate	547, 6651.
Heptachlor	508, 525.2, 508.1, 505, 551.1.
Heptachlor Epoxide	508, 525.2, 508.1, 505, 551.1.
Hexachlorobenzene	508, 525.2, 508.l, 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)	508A.
(as Aroclors)	508.1, 508, 525.2, 505.
Pentachlorophenol	515.2, 525.2, 555, 515.1.
Picloram [4]	515.2, 555, 515.1.
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 March 3, 2000, 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 Methods 515.1, 515.2 and 555.

(2) The following EPA methods will remain available for compliance monitoring until March 3, 2000. 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, 515.1 Rev. 4.0, 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, as follows:

Contaminant	Method [1]
Benzene	502.2, 524.2.
Carbon tetrachloride	502.2, 524.2, 551.
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-Trichloroethane	502.2, 524.2, 551.
Trichloroethylene	502.2, 524.2, 551.
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.
Vinyl chloride	502.2, 524.2.
Xylenes (total)	502.2, 524.2.
2,4-D [4](as acid, salts and esters)	515.2.
2,4,5-TP [4] (Silvex)	515.2.
Alachlor [2]	507, 525.2, 508.1, 505.
Atrazine [2]	507, 525.2, 508.1, 505.
Benzo(a)pyrene	525.2.

Contaminant	Method [1]
Carbofuran	531.1.
Chlordane	508, 525.2, 508.1, 505.
Dalapon	515.1.
Di(2-ethylhexyl)adipate	506, 525.2.
Di(2-ethylhexyl)phthalate	506, 525.2.
Dibromochloropropane (DBCP)	504.1, 551.
Dinoseb [4]	515.2.
Endrin	508, 525.2, 508.1, 505.
Ethylene dibromide (EDB)	504.1, 551.
Heptachlor	508, 525.2, 508.1, 505.
Heptachlor Epoxide	508, 525.2, 508.1, 505.
Hexachlorobenzene	508, 525.2, 508.1, 505.
Hexachlorocyclopentadiene	508, 525.2, 508.1, 505.
Lindane	508, 525.2, 508.1, 505.
Methoxychlor	508, 525.2, 508.1, 505.
Oxamyl	531.1.
PCBs [3] (as Aroclors)	508.1, 508, 525.2, 505.
Pentachlorophenol	515.2, 525.2, 515.1.
Picloram [4]	515.2, 515.1.
Simazine [2]	507, 525.2, 508.1, 505.
Toxaphene	508, 508.1, 525.2, 505.
Total Trihalomethanes	502.2, 524.2, 551.

[1] [Reserved].

[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 Methods 515.1 and 515.2.

(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 completion of the composite analysis or before the holding time for the initial sample is exceeded whichever is sooner.

* * * * *

(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.

(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) * * *

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

* * * * *

(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.

(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 141.40 is amended by revising paragraphs (g) and (n)(11) introductory text, and by revising the entries in the table for ''metolachlor'' and ''metribuzin'' in paragraph (n)(11) to read as follows:

§ 141.40 Special monitoring for inorganic and organic contaminants.

* * * * *

(g) Analysis for the unregulated contaminants listed under paragraphs (e) and (j) of this section shall be conducted using EPA Methods 502.2 or 524.2, or their equivalent as determined by EPA, except analysis for bromodichloromethane, bromoform, chlorodibromomethane and chloroform under paragraph (e) of this section also may be conducted by EPA Method 551.1, and analysis for 1,2,3-trichloropropane also may be conducted by EPA Method 504.1 or 551.1. A source for the EPA methods is referenced at § 141.24(e).

* * * * *

(n) * * *

(11) 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, N.W., Suite 700, Washington, DC. Systems shall monitor for the unregulated organic contaminants listed below, using the method(s) identified below and using the analytical test procedures contained in *Technical Notes on Drinking Water Methods*, EPA–600/R–94–173, October 1994, which is

available at NTIS, PB95–104766. Method 6610 shall be followed in accordance with the *Standard Methods for the Examination of Water and Wastewater 18th Edition Supplement,* 1994, American Public Health Association (APHA) or with the 19th edition of *Standard Methods for the Examination of Water and Wastewater,* 1995, APHA; either edition may be used. A source for APHA method 6610 and for EPA Methods 505, 507, 508, 508.1, 515.2, 525.2 and 531.1 is referenced at § 141.24(e).

Contaminants	Method
* * * * * * *	
Metolachlor	507, 525.2, 508.1, 551.1
Metribuzin	507, 525.2, 508.1, 551.1
* * * * * * *	

* * * * *

6. Section 141.74 is amended by revising the first five sentences of 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 Coliforms [2]	Total Coliform Fermentation Technique [3,4,5]	9221A, B, C.
	Total Coliform Membrane Filter Technique	9222A, B, C.
	ONPG-MUG Test [6]	9223
Fecal Coliforms [2]	Fecal Coliform MPN Procedure [7]	9221E.
	Fecal Coliform Membrane Filter Procedure	9222D.
Heterotrophic bacteria [2]	Pour Plate Method	9215B.
Turbidity	Nephelometric Method	2130B.
	Nephelometric Method	180.1.[8]
	Great Lakes Instruments	Method 2.[9]

[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 are encouraged but not required to 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 coliforms, 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] The ONPG-MUG Test is also known as the Autoanalysis Colilert System. A source for this test is referenced at § 141.21(f)(5)(iii).

[7] A–1 Broth may be held up to three months in a tightly closed screwcap tube at 4°C.

[8] ''Methods for the Determination of Inorganic Substances in Environmental Samples'', EPA–600/R–93–100, August 1993. Available at NTIS, PB94–121811.

[9] 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)(i) and by removing the semicolon at the end of paragraph (a)(1)(ii)(B) and adding a period in its place to read as follows:

§ 141.89 Analytical methods.

(a) * * *

(1) * * *

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

* * * * *

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		3120B	

Contaminant	EPA	ASTM [3]	SM [4]	Other
	[2] 200.8		3113B	
	[2] 200.9		3111D	
Chloride	[1] 300.0	D4327–91	4110B	
	.....		4500–Cl–D	
	.....	D512–89B	4500–Cl–B	
Color	.....		2120B	
Foaming Agents	.....		5540C	
Iron	[2] 200.7		3120B	
	[2] 200.9		3111B	
	.....		3113B	
Manganese	[2] 200.7		3120B	
	[2] 200.8		3111B	
	[2] 200.9		3113B	
Odor	.....		2150B	
Silver	[2] 200.7		3120B	I–3720–85.[5]
	[2] 200.8		3111B	
	[2] 200.9		3113B	
Sulfate	[1] 300.0	D4327–91	4110B	
	[1] 375.2		4500–SO_4–F	
	.....		4500–SO_4–C,D	
	.....	D516–90	4500–SO_4–E	
TDS	.....		2540C	
Zinc	[2] 200.7		3120B	
	[2] 200.8		3111B	

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, D.C. 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, 101 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, 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] *Techniques of Water Resources Investigation of the U.S. Geological Survey,* Book 5, Chapter A–1, 3rd ed., 1989, Method I–3720–85; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225–0425.

[FR Doc. 98–22204 Filed 9–2–98; 8:45 am]

BILLING CODE 6560–50–U