

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 141

[WH-FRL-6132-3]

RIN 2040-AD04

National Primary Drinking Water Regulations: Analytical Methods for Certain Pesticides and Microbial Contaminants

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: EPA is proposing to approve the use of a new membrane filter medium for the simultaneous detection of total coliform and *Escherichia coli* (*E. coli*) and three revised chemical analytical methods for compliance determinations of acid herbicides and diquat in drinking water. The Agency proposes to withdraw approval of the previous version of the EPA Method for diquat. The Agency is also proposing to amend and clarify laboratory certification requirements, and to amend the regulations to make the current recommendation to ship microbiological samples below 10 °C a requirement. The purpose of the proposal is to approve new methods, withdraw an outdated EPA method, clarify laboratory certification requirements and improve the reliability of sample collection for total or fecal coliform. The rule is expected to satisfy public requests for approval of new technologies in drinking water analyses.

DATES: Comments on this proposed rule must be received in writing by September 29, 1998.

ADDRESSES: Written or electronic comments on this proposed rule may be submitted. Written comments may be sent to the W-97-05 Drinking Water Analytical Methods Proposed Comment Clerk, U.S. Environmental Protection

Agency, Water Docket, MC 4101, 401 M Street, SW, Washington, DC 20460. Please submit any references cited in your comments. EPA would appreciate an original and 3 copies of your comments and enclosures (including references).

No facsimiles (faxes) will be accepted because EPA cannot ensure that they will be submitted to the Water Docket. To ensure that EPA can read, understand and therefore properly respond to comments, the Agency would prefer that commenters cite, where possible, the paragraph(s) in the proposed regulation (e.g., 141.24(e)) to which each comment refers. Commenters should use a separate paragraph for each method or issue discussed. Commenters who would like acknowledgment of receipt of their comments should include a self-addressed, stamped envelope. For information on submitting comments electronically see Supplementary Information.

The record for this rulemaking has been established under docket number W-97-05. Copies of the 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, DC 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.

FOR FURTHER INFORMATION CONTACT: Ms. Jeanne Campbell, Standards and Risk Management Division, Office of Ground Water and Drinking Water (MC-4607), U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, telephone 202-260-7770. General 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 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, DC 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.

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Electronic Comment Submission

Electronic comments should be addressed to the Internet address: owdocket@epamail.epa.gov. Electronic comments must be submitted as an ASCII file and avoid use of special characters and any form of encryption. Electronic comments must be identified by the docket number W-97-05. Comments and data will also be accepted on disks in WordPerfect in 5.1 or 6.1 format or ASCII file format. Electronic comments on this notice may be filed online at many Federal Depository Libraries. Electronic comments will be transferred into a paper version for the official record. EPA will attempt to clarify electronic comments if there is an apparent error in transmission. Comments provided electronically will be considered timely if they are submitted electronically by 11:59 p.m. (Eastern time) on September 29, 1998.

Information on Internet Access

This **Federal Register** document has been placed on the Internet for public review and downloading at the following location: <http://www.epa.gov/fedrgrstr>.

Availability and Sources for Methods

Copies of final methods published by EPA are 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. Copies of draft EPA methods may be obtained from USEPA, National Exposure Research Laboratory (NERL)-Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268. FAX request for copies of draft EPA methods may be sent to NERL-Cincinnati at 513-569-7757. All other methods must be obtained from the publisher. Publishers (with addresses) for all approved methods are cited at 40 CFR part 141 and in the References section of today's rule.

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I. Statutory Authority

The Safe Drinking Water Act (SDWA), as amended in 1996, requires EPA to promulgate national primary drinking water regulations (NPDWRs) which specify maximum contaminant levels (MCLs) or treatment techniques for drinking water contaminants SDWA section 1412, 42 U.S.C. 300g-1. NPDWRs apply to public water systems pursuant to SDWA section 1401, 42 U.S.C. 300f(1)(A). According to SDWA section 1401(1)(D) 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 procedure. * * *" see 42 U.S.C. 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 U.S.C.

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

II. Regulatory Background

EPA has promulgated analytical methods for all currently regulated drinking water contaminants for which MCLs or monitoring requirements have been promulgated. In most cases, the Agency has 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, or withdraw methods that become obsolete or amend other requirements (such as certification requirements) for the use of approved methods. EPA takes these actions as quickly as possible after new or revised methods are published.

III. Explanation of Today's Action

This proposal invites public comment on a new medium for microbiological testing, on three revised chemical analytical methods for acid herbicides and diquat, on withdrawal of an obsolete EPA method for diquat and on methods-related changes to the regulations as follows. EPA is proposing to approve the use of a new membrane filter medium, 4-methylumbelliferyl-beta-D-galactopyranoside indoxyl-beta-D gluconate (MI) agar, for the determination of total coliforms and *E. coli*, and to amend the regulations to codify the current recommendation to ship microbiological samples below 10 °C. EPA is proposing a revised method (EPA Method 515.3) for acid herbicides, but would not withdraw approval of EPA Methods 515.1 or 515.2 for determination of acid herbicides because these methods are not obsolete. EPA is also proposing American Society for Testing and Materials (ASTM) method D5317-93 for acid herbicides provided quality control limits specified in EPA Method 515.1 are met. EPA is proposing to withdraw approval of EPA Method 549.1 for measurement of diquat and to replace it with an improved version, EPA Method 549.2. Withdrawal of EPA Method 549.1 would be effective 18 months after promulgation of a final rule that would approve EPA Method 549.2 for diquat. EPA is proposing to amend the certification regulations to clarify that analysis for certain additional

contaminants does not require certification. Finally, the proposal would also require a laboratory to successfully analyze a PE sample for each method for which the laboratory seeks certification rather than one PE sample per analyte.

A. New Membrane Filter Medium for the Simultaneous Detection of Total Coliform and *E. coli*

EPA is proposing the approval of a new membrane filter medium known as MI Agar for the simultaneous detection of total coliforms and *E. coli* in drinking water samples and the enumeration of total coliforms in raw water samples. In a procedure developed by EPA, a water sample is passed through a membrane filter and the filter is placed on an MI Agar plate (Brenner 1993). The medium is incubated at 35 °C for 16–24 hours and examined either for fluorescence of total coliforms under longwave (366 nm) ultraviolet light or for the blue color under ambient light that is characteristic of *E. coli*.

The MI Agar procedure is based on the ability of total coliforms to produce the enzyme beta-galactosidase which hydrolyzes the 4-methylumbelliferyl-beta-D-galactopyranoside in the medium to form a product which fluoresces. The procedure is also based on the ability of *E. coli* to produce the enzyme beta-glucuronidase which hydrolyzes indoxyl-beta-D-glucuronide to form a blue color.

In a comparison study between the membrane filter test using MI Agar and already approved reference media (mEndo agar, Nutrient Agar+MUG), the MI Agar performed equal to or better than the reference media and non-coliform background counts were significantly lower for MI Agar (Brenner 1993, 1996a,b). For total coliforms the false-positive rate was 4.9% and the false-negative rate was less than 8.8%. The false-positive and false-negative rates for *E. coli* were both 4.3% (Brenner 1993). Based upon these results, EPA believes that the membrane filter method using MI Agar is satisfactory as a compliance method for total coliforms and *E. coli*.

B. Pesticide Methods

Draft EPA Method 515.3, Acid Herbicides

EPA is proposing a draft of EPA Method 515.3 (EPA 1996) as a modification of, but not replacement for, EPA Method 515.1 (EPA 1995). Both methods require hydrolysis and derivatization of the herbicides, and rely on use of liquid-liquid extraction (LLE) and gas chromatographic analysis with

an electron capture detector. EPA Method 515.3 uses a different reagent to derivatize the acid herbicides, smaller volumes of drinking water sample and less extraction solvent. EPA Method 515.2 (EPA 1995) for acid herbicides, which uses solid phase extraction (SPE) will also continue to be approved because many laboratories prefer SPE as a solvent-saving alternative to the LLE step in EPA Methods 515.1 and 515.3.

EPA has been asked to offer alternatives to diazomethane as the derivatizing reagent because it can form explosive products if it is not handled carefully and in small amounts. EPA's current alternative reagent, trimethylsilyldiazomethane (TMSD), produces acceptable results and is being retained as an option in EPA Method 515.1. Use of TMSD however, can produce unwanted interferences in the chromatography. EPA is developing Method 515.3 to find an effective alternative reagent that produces fewer impurities.

EPA is proposing a draft of EPA Method 515.3 for comment while development work is continuing. EPA realizes the draft method contains method detection limits (MDLs) for some analytes that exceed detection limits specified at 40 CFR 141.24(h)(18). These detection limits specify a minimum sensitivity required to demonstrate that a contaminant has not been detected in a compliance sample. Systems with nondetects are often eligible for a reduced frequency for repeat monitoring. Data in tables 2 and 3 of draft EPA Method 515.3 list MDLs for two types of derivatization. Table 2 is for derivatization with diazomethane, and MDLs for four (2,4-D, dinoseb, pentachlorophenol and picloram) of the six regulated acid herbicides exceed detection limits specified in the regulations. Table 3 is for derivatization with tetrabutylammonium hydroxide and methyl iodide, and MDLs for three (2,4-D, dinoseb and picloram) acid herbicides exceed the regulatory limits. However, because EPA Method 515.3 has sufficient sensitivity and reproducibility to determine that any regulated acid herbicide is reliably and consistently below the MCL, this method would be used to screen for acid herbicides in follow-up samples that are required when a regulated herbicide has been detected in prior monitoring by a more sensitive measurement. Also, in routine use, some laboratories may be able to improve the sensitivity of EPA Method 515.3 and achieve the required detection limits for 2,4-D, dinoseb, pentachlorophenol and picloram.

EPA proposes to approve draft EPA Method 515.3 for compliance

determinations of all six regulated acid herbicides (2,4-D, 2,4,5-TP, dalapon, dinoseb, pentachlorophenol and picloram) and the unregulated acid herbicide, dicamba. Final approval for compliance monitoring would be contingent upon public comment and EPA's evaluation of the final development work, which would include second laboratory validation of the method.

ASTM Method D5317-93, Acid Herbicides

ASTM Method D5317-93 (ASTM 1996) uses procedures (sodium hydroxide hydrolysis, diazomethane derivatization, liquid-liquid extraction and gas chromatography with electron capture detection) that are equivalent to those used in EPA Method 515.1. EPA is proposing to approve this 1993 version of ASTM D5317 for determination of five acid herbicides in drinking water samples. The approval would be contingent upon superseding the variable control limit for the laboratory fortified blank (LFB), specified in section 6g of D5317-93, with the fixed upper control limit of $\pm 30\%$ specified in sections 9.3.2 and 9.7.2 of EPA Method 515.1 (Rev. 4.1). The variable control limit criterion for the LFB specified in D5317-93 is equivalent to the variable limit specified in section 10.7.2 of the 1989 version, Rev. 4.0, of EPA Method 515.1. EPA published Rev. 4.1 of EPA Method 515.1 to specify a fixed upper limit of $\pm 30\%$ for the LFB in 1995, which was after the last update of ASTM D5317-93.

The detection limits listed for pentachlorophenol (PCP) and 2,4-D in Table 1 of the ASTM method exceed the limits specified at 40 CFR 141.24(h)(18). However, the method has sufficient sensitivity and reproducibility to determine that either herbicide is reliably and consistently below the MCL. Thus, D5317-93 could be useful to screen for PCP or 2,4-D in follow-up compliance samples that might be required when detection of the target acid herbicide has been established by prior monitoring. Also, in routine use, some laboratories may be able to improve the sensitivity of D5317-93 so that it would be suitable for lower level compliance monitoring of PCP or 2,4-D. Although D5317-93 should be applicable to compliance determinations of dalapon and dinoseb, the method does not contain performance data for these two analytes. Therefore, EPA proposes to approve D5317-93 for compliance determinations of four regulated acid herbicides: PCP, picloram, 2,4-D and 2,4,5-TP, and the unregulated acid

herbicide, dicamba, but not for determinations of dalapon or dinoseb. EPA also proposes to add a footnote to the tables of approved methods to require that the $\pm 30\%$ control limits for the LFB specified in EPA Method 515.1 (Rev. 4.1) supersede the variable limits specified in D5317-93.

Draft Method 549.2, Diquat

EPA is proposing a draft version of EPA Method 549.2 (EPA 1997a) as a revision of EPA Method 549.1. Both versions use ion exchange with a specially conditioned C₈ cartridge or disk to remove diquat from the water sample. In the revised version, EPA Method 549.2, the sample pH is not adjusted to 10.5 before extraction because EPA has determined that this adjustment does not improve the extraction of diquat. Also, at pH 10.5, a precipitate is formed in several hard water samples. The precipitate causes very long delays in passing the sample through the solid phase sorbent, which result in unacceptably low recoveries of diquat. Changes resulting in EPA Method 549.2 are supported by data contained in the method that demonstrate acceptable extraction efficiency of method analytes at pH 7. No precipitation occurred in the pH range of 7 to 9 in artificial matrices simulating extremely hard water.

Data included in the EPA Method 549.2 shows that recovery of diquat is more variable and lower than with normal phase liquid-solid extraction (LSE) of organic compounds (cf. Method 525.2). Matrix effects are expected to be more of a problem with ion exchange because it is affected by the ionic strength and ionic composition of the drinking water sample, both of which can vary greatly with time and with the type of source.

In addition to matrix effects, EPA has observed significant variability in diquat recovery between brands of media. The variability appears to be greater with cartridge than with disk media. EPA seeks comment on what additional QC steps could be added to the method to detect and correct this problem. For example, EPA could increase the frequency of required matrix spikes from the current rate of 10%. EPA also seeks advice on ways to detect and correct for performance differences between brands (or within lots) of extraction media.

EPA believes EPA Method 549.2 is superior to EPA Method 549.1 because it solves the precipitation problem. The diquat recovery problem described above occurs with either version of the method. Therefore, the recovery rate is equivalent for both methods. Final

approval of EPA Method 549.2 and withdrawal of EPA Method 549.1 would be contingent upon public comment and EPA's evaluation of the final development work. This work would include second laboratory validation with a variety of matrices spiked with diquat.

Other Methods for Acid Herbicides and Diquat

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 which are developed or adopted by voluntary consensus standard bodies. EPA searched for acceptable voluntary consensus standards to propose with the methods EPA is proposing in this rule for diquat (EPA Method 549.2) and for acid herbicides (EPA Method 515.3). There are no methods for diquat that are published by ASTM or the Standard Methods for Examination of Water and Wastewater (Standard Methods or SM). These organizations have, however, published a method for acid herbicides (ASTM D 5317-93 and SM 6640B, respectively) that EPA evaluated for today's proposal.

As discussed above, EPA is proposing to approve ASTM D 5317-93 for five acid herbicides: 2,4-D, 2,4,5-TP, dalapon, dicamba, pentachlorophenol and picloram. EPA also evaluated SM 6640B (APHA 1995), which Standard Methods developed to be similar to EPA Method 515.1 (Rev. 4.0). SM 6640B measures all of the unregulated and regulated acid herbicides with MDLs that meet the detection limits specified at 40 CFR 141.24(h)(18). EPA does not propose SM 6640B in today's rule because SM 6640B uses sample preparation and quality control procedures that are not similar enough to be judged equivalent to procedures specified in EPA Method 515.1, Rev. 4.1. In the next paragraphs, EPA provides reasons why, if used as written, use of SM 6640B could lead to under reporting of acid herbicide contamination in compliance samples.

The sample preparation instructions in sections 2, 4 b and c of SM 6640B refer to the hydrolysis step as "an optional procedure for simplified alkaline solvent wash of difficult matrices". Hydrolysis is not optional nor is its primary function to clean-up "difficult matrices" in the EPA method. As explained in section 2.1 of EPA Method 515.1, the regulated herbicides

are "applied as a variety of salts and esters". Thus "it is vital to hydrolyze them to the parent acid prior to extraction" and derivatization. EPA has previously reinforced the necessity of hydrolysis with a footnote in the tables of approved methods at 40 CFR 141.24(e) and 141.40(n)(11) to state that hydrolysis is mandatory, not optional. EPA believes, that as written, analysts using SM 6640B might believe the "alkaline solvent wash," which is not a wash but a critical chemical conversion step, is not needed in relatively clean matrices, such as drinking water.

Two significant problems with the procedures specified in SM 6640B for use of an internal standard are the possibility of interferences and losses due to addition of the standard at the wrong time. To calibrate the instrument, EPA Method 515.1 requires use of an internal standard. EPA selected 4,4'-dibromooctofluorobiphenyl (DBOB) because DBOB is not likely to be a sample contaminant. Instructions in 3c of the quality control section of SM 6640 B specify use of 1,2,3-trichloropropane (TCP), which may be a sample contaminant because TCP is both a solvent used as an industrial degreaser and a potential chemical by-product of drinking water disinfection. Addition of TCP rather than DBOB to sample extracts may lead to erroneous calibration because of interference with TCP in waters contaminated with TCP runoff or discharge, or with TCP synthesized during disinfection of the drinking water supply. Sections 4b and 6f of SM 6640B allow the analyst the discretion not to use an internal standard (6f) or to add it prior to, rather than after, derivatization of the sample (4b). EPA Method 515.1 does not allow use of an internal standard to be optional and it must be added after derivatization of the sample extract so as not to incur losses from incomplete derivatization of the internal standard.

To propose the current version of SM 6640B for compliance monitoring of acid herbicides would require EPA to annotate the listing in the CFR with several footnotes to supersede sample preparation and quality control procedures that are specified in SM 6640B. Because footnotes in the CFR have the potential to become separated from the written method used by the analyst, EPA keeps these footnotes to a minimum. Rather than propose SM 6640B in today's rule, EPA prefers to work directly with the Standard Methods committee to revise SM 6640 B for publication in the 21st edition of *Standard Methods* or in the supplement to the 20th edition. EPA solicits compelling reasons why it would be

beneficial to approve the current version of SM 6640B for compliance monitoring.

C. New Information on Previously Approved Colisure Test

The Millipore Corporation has submitted data to EPA indicating that the Colisure Test, which EPA previously approved for the determination of total coliform and *E. coli* under the Total Coliform Rule, can be read after a 24-hour incubation period. Currently, the regulation at 40 CFR 141.21(f)(3) (footnote 7 to the Table) specifies a minimum incubation time of 28 hours. EPA is now in the process of evaluating the data. The Agency has placed a copy of Millipore's submission in the Water Docket and is requesting public comment on the minimum incubation time for the Colisure Test.

D. Amendments and Clarifications

The Agency is proposing to amend and clarify laboratory certification requirements and to amend the regulations to codify as a requirement the current recommendation to ship microbiological samples below 10 °C.

Require Chilling of Microbiological Samples During Storage and Transit

EPA is proposing to require that all source water samples collected for the analysis of total coliforms or fecal coliforms under the Surface Water Treatment Rule (SWTR), or any distribution system sample collected for the analysis of heterotrophic bacteria, be held at a temperature below 10 °C during storage and transit. Currently, in a footnote to the table at 40 CFR 141.74(a)(1), EPA encourages, but does not require, systems to meet this provision. The Agency would make the holding temperature limit mandatory because it believes that microbial densities in a water sample may change dramatically at higher temperatures over a short period of time (hours) and would thus no longer mirror the microbial densities in the water from which they originated. The proposed change in holding temperature would render the EPA methods consistent with SM 9060B (APHA 1995) which requires that water samples for microbiological examination be held at temperatures below 10 °C. The proposal would not change the holding time and temperature provisions for total coliform, fecal coliform, or *E. coli* samples collected in the distribution system to meet the requirements of the Total Coliform Rule (TCR) at 40 CFR 141.21(f). Analysis under the TCR require determination of presence and absence of microorganisms and not their

densities, and are therefore less sensitive to storage and transit temperature changes.

Updating CFR Section Citations

The regulations at 40 CFR 141.28(a) applicable compliance determinations by certified laboratories currently read as follows:

For the purpose of determining compliance with §§ 141.21 through 141.27, 141.41 and 141.42, samples may be considered only if they have been analyzed by a laboratory certified by the State except that measurements for turbidity, free chlorine residual, temperature and pH may be performed by any person acceptable to the State."

EPA proposes to change the term "free chlorine residual" in this section to "disinfectant residual" for accuracy. The term "free chlorine" is confusing because it begs the question whether a laboratory must be certified to conduct analysis for disinfectant residuals other than free chlorine residuals. The proposed change would specify the more correct and broader term, disinfectant residual. Current federal regulations do not require certification for measuring any of the disinfectant residuals. States already approve the measurement of disinfectant residuals by any person acceptable to the State.

EPA also proposes to amend § 141.28(a) to add trihalomethane, unregulated contaminant, filtration and disinfectant, and lead monitoring sections (§§ 141.30, 141.40, 141.74, 141.89, respectively) and to remove obsolete section references to sodium and corrosivity monitoring (§§ 141.41 and 141.42). This change would impose no new burden because certification requirements for these parameters are currently specified elsewhere in federal regulations. The change merely clarifies that 40 CFR 141.28(a) also applies to these parameters.

EPA proposes to amend 40 CFR 141.28(a) and 141.89(a)(1) to address confusion about whether a laboratory must be certified to conduct monitoring for certain additional contaminants. Currently, 40 CFR 141.89(a)(1) requires certification to conduct analyses for lead, copper, alkalinity, calcium, conductivity, orthophosphate and silica. However, the regulations specify acceptance criteria only for the analysis of samples for lead and copper and not for alkalinity, calcium, conductivity, orthophosphate and silica. Acceptance criteria for these latter five contaminants were omitted because EPA intended for the certification exception provisions of 40 CFR 141.28(a) to apply to these contaminants the same way the exceptions apply for pH, temperature,

turbidity and disinfectant residuals. The certification exceptions at 40 CFR 141.28 (a) state that certain analyses may be conducted by any person acceptable to the State. The regulations at 40 CFR 141.28 (a) and 141.89(a)(1) would be amended to clarify EPA's intent that analyses for alkalinity, calcium, conductivity, disinfectant residual, orthophosphate, pH, silica, temperature and turbidity may be performed by any person acceptable to the State. Section 40 CFR 141.89 would no longer require certification for the measurement of these contaminants.

Requirement To Report Method Used To Analyze PE Samples

EPA proposes to amend the NPDWRs at §§ 141.23(k), 141.24(f) and (h) and 141.89(a) in order to provide greater assurance that public water systems dependably comply with MCLs. Those regulations describe the Performance Evaluation (PE) sample analysis requirements associated with compliance monitoring for certain contaminants regulated under the SDWA. The regulations provide that analysis for the drinking water contaminants regulated under those sections must be conducted by a laboratory that has received certification by EPA or the State. These regulations further provide that, in order for a laboratory to receive certification to conduct analyses for the regulated contaminants, the laboratory must analyze PE samples for the regulated contaminants. PE sample testing is intended to ensure that the laboratory accurately measures the contaminant of concern, i.e., is proficient in the analysis for such contaminants.

To ensure that public water systems dependably comply with MCLs, EPA proposes to amend the PE sample requirement to specify that a laboratory needs to be certified not only for measurement of specific contaminants, but also that such certification must specify the method(s) used by that laboratory for evaluation of such contaminant(s). The Agency's primary concern is that laboratories be certified for the proficiency on the methods they actually use for analysis for water samples used in compliance monitoring. In the recently published fourth edition of the *Manual for the Certification of Drinking Water Laboratories* (EPA 1997b), EPA's laboratory certification guidance, the Agency recommended that EPA and State certifying agencies require a laboratory to successfully analyze a PE sample for each method for which the laboratory seeks certification rather than one PE sample per analyte. Today's proposal would codify that

recommendation. EPA believes this is a reasonable change because laboratories always have had to report to the PE sample provider what method was used to analyze the PE sample. Many, if not most, State laboratory certification officers currently require this information.

As currently written, the PE sample requirements at §§ 141.23(k), 141.24(f) and (h) and 141.89(a) allow certification for any method approved for measurement of the target analyte provided that the laboratory successfully analyzed the PE sample with any one of the approved methods. Under today's proposal, EPA would clarify the regulations to carry out the original intent of requiring a certification certificate to describe both the analyte and approved method covered by the certificate. The proposed change would, for example, require successful analysis of a PE sample with both EPA Method 524.2 and 502.2 to obtain certification for VOCs if the laboratory elects to use both mass spectrometer and electrolytic conductivity/photo ionization technologies, respectively, to measure VOCs. Under today's proposal, no laboratory would be required to use methods that it would not otherwise use. The requirement would merely require proficiency in using the methods the laboratory has chosen to use. This amendment would only affect laboratories that both (1) choose to be certified for the same analyte with more than one method and (2) are not already required by their certification authority to be certified by method and by analyte. EPA is interested in any comments that provide compelling reasons to show that this modification to the PE sample requirements would be unnecessary or unreasonable. EPA is also seeking comments on this requirement in regards to the national standards for accreditation of environmental laboratories which National Environmental Laboratory Accreditation Conference (NELAC) is developing, and the Agency's implementation of a Performance-Based Measurement System in the future. NELAC is sponsored by EPA as a voluntary association of state and federal officials with the purpose of developing national performance standards for environmental laboratories. NELAC standards are available on the Internet at <http://www.epa.gov/ttn/nelac/>.

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 entitlement, 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 (for purposes of EPA's analysis, the Agency defines small entities as 10,000 or fewer customers or small laboratories with sales revenue below \$6 million annually).

This rule proposes to approve revised methods for compliance determination of selected chemical and microbial contaminants. Previous versions of all methods for these contaminants except for diquat will continue to be approved. EPA is proposing to withdraw approval of its current method for diquat. EPA has determined that requiring pH adjustment prior extraction is not necessary. Because the proposed diquat method is similar in all other aspects to the currently approved method, withdrawal of this method and adoption of the new method will not have any economic burden on public water systems or the analytical laboratories performing analyses on behalf of these systems whether small entities or small businesses.

The proposed amendment would also require that laboratories be certified for proficiency in the analytical method they actually use. Thus, in the case of laboratories that choose to be certified for an analyte using more than one approved method, the regulation would require such laboratories to analyze a PE sample for each method for which certification is requested. Small laboratories are not expected to consider this option. Currently most laboratories elect to be certified for only one method and there is no reason to believe this situation will change. Even if some small laboratories elected to seek certification for more than one method for some analytes, EPA has concluded that the number doing so would be few and the consequent economic impact on

laboratories that are small businesses would not be significant.

The proposal to hold source water samples for microbiological analysis below 10 °C during transit/storage is also not expected to cause any significant increase in monitoring cost for big or small water systems. The Agency anticipates that only about 2,000 surface water systems which do not currently filter water (approx. 1% of all systems) will be affected by the cooling requirement for total coliform and fecal coliform samples. All surface water systems (approx. 9% of all systems) will be affected by the cooling requirement for heterotrophic plate count (HPC). However, the HPC requirement is an optional substitute for maintaining a detectable disinfection residual. The requirement to hold samples below 10 °C can be easily met by shipping samples in reusable ice packs. EPA estimates a one time cost of less than \$5 per sample for the ice packs; over a period of time this represents only a slight increase in sample shipping cost under current requirements. Based on the above stated considerations, the Agency concluded that this proposal, if promulgated, will not have a significant economic impact on a substantial number of small entities.

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. Therefore, today's proposed rule is not subject to the requirements of section 202 and 205 of the UMRA.

Today's rule proposes use of additional analytical methods by public water systems and laboratories conducting analysis for contaminants in drinking water. Therefore, the proposal would provide regulatory relief in the form of increased operational flexibility to laboratory analysts. Earlier versions of all methods approved in this proposed rule (except for the diquat method) would continue to be approved. The withdrawal of the earlier version of the diquat method would not adversely affect analytical laboratories because the new version is simpler and easier to use. The proposed amendment requiring that laboratories be certified based on the proficiency on the method they actually use, would impose a minor requirement for laboratories that choose to be certified for an analyte by more than one method. Currently most laboratories elect to be certified by one method and there is no reason to believe laboratories would be compelled to incur the cost of an additional PE sample in the future. The requirement to hold source water samples below 10°C during transit/storage would affect only a small fraction (1-9%) of the water utilities and the effect on monitoring cost would be very minor, and attributable to a slight increase in sample shipping cost.

Based on the information presented above, EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. Therefore, today's proposed 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 information 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. 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 the standard.

In preparing today's proposal, EPA searched for consensus methods that would be acceptable for compliance determinations under the SDWA for the measurement of diquat and six acid herbicides. EPA found no methods for diquat but found two methods (ASTM D5317-93 and SM 6640B) for the acid herbicides. As explained in the preamble to this proposed rule, EPA is proposing D5317-93 provided the QC criterion is superseded by a more stringent EPA criterion. EPA is not proposing SM 6640B because of significant shortcomings in the sample preparation and quality control sections of the method instructions. EPA will offer to work with Standard Methods to revise SM 6640B for publication in future editions of *Standard Methods for the Examination of Water and Wastewater*. EPA invites comments on the potential use of voluntary consensus standards in this rulemaking. EPA invites public comments on the

Agency's proposal as well as identification and information about other voluntary consensus standards, which the Agency could consider for determination of diquat or acid herbicides under the SDWA.

G. 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 1995. Nineteenth edition of *Standard Methods for the Examination of Water and Wastewater*, 1995, American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.
- ASTM 1996. *Annual Book of ASTM Standards*, 1996, Vol. 11.02, American Society for Testing and Materials, 101 Barr

- Harbor Drive, West Conshohocken, PA 19428.
- Brenner 1993. Brenner, K.P., et al., "New medium for the simultaneous detection of total coliform and *Escherichia coli* in water", *Appl. Environ. Microbiol.* 59:3534–3544.
- Brenner 1996a. Brenner, K.P., et al., "Comparison of the recoveries of *Escherichia coli* and total coliform from drinking water by the MI Agar method", *Appl. Environ. Microbiol.* 62:203–208.
- Brenner 1996b. Brenner, K.P., et al., "Interlaboratory evaluation of MI Agar and the U.S. Environmental Protection Agency—approved membrane filter method for the recovery of total coliform and *Escherichia coli* from drinking water", *J. Microbiol. Methods* 27:111–119.
- 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 1996. Draft Method 515.3 is available from U.S. Environmental Protection Agency, National Exposure Research Laboratory (NERL)-Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268.
- EPA 1997a. Draft Method 549.2 is available from U.S. Environmental Protection Agency, National Exposure Research Laboratory (NERL)-Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268.
- EPA 1997b. *Manual for the Certification of Laboratories Analyzing Drinking Water*, Fourth Edition, Office of Water Resource Center (RC–4100), 401 M Street, SW, Washington, DC 20460, EPA 815–B–97–001, March 1997.

List of Subjects in 40 CFR Part 141

Environmental protection, Analytical methods, Chemicals, Incorporation by reference, Intergovernmental relations, Microorganisms, Monitoring, National Primary Drinking Water Regulations, Water supply.

Dated: July 23, 1998.

Carol M. Browner,
Administrator.

For the reasons set out in the preamble, part 141 of chapter I, title 40, Code of Federal Regulations, are proposed to be amended as follows:

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

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

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

2. Section 141.21 is amended by revising paragraph (f)(3) and adding a new (f)(6)(v) with a table 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 ⁶	9222A, B, C
	Presence-Absence (P-A) Coliform Test ^{5,7}	9221D
	ONPG-MUG Test ⁸	9223
	Colisure Test ⁹	

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, D.C. 20460 (Telephone: 202–260–3027); or at the Office of Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, D.C. 20408.

¹ Methods 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 coliform, 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 MI agar also may be used. Preparation and use of MI agar is set forth in the article, "New medium for the simultaneous detection of total coliform and *Escherichia coli* in water" by Brenner, K.P., et al., 1993, *Appl. Environ. Microbiol.* 59:3534–3544.

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

⁸ 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).

⁹ 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.

(6) * * *
(v) The membrane filter method with MI agar, a description of which is cited

in a footnote to the table at paragraph (f)(3) of this section.

* * * * *

3. Section 141.23(k)(3)(ii) is amended by revising the introductory text before the table to read as follows:

§ 141.23 Inorganic chemical sampling and analytical requirements.

* * * * *

(k) * * *
(3) * * *
(ii) For each contaminant that has been included in the PE sample and for each method for which the laboratory desires certification achieve quantitative results on the analyses that are within the following acceptance limits:

* * * * *

- 4. Section 141.24 is amended by:
 - a. Revising the section heading;
 - b. Adding a sentence to the end of paragraph (e);
 - c. Revising, in the table in paragraphs (e), the entries for "2,4-D", "2,4,5-TP (Silvex)", "Dinoseb", "Diquat", "Pentachlorophenol" and "Picloram"; and adding footnotes 4 and 5;
 - d. Revising paragraphs (f)(17)(i)(A), (f)(17)(ii) introductory text; and paragraph (f)(17)(ii)(A); and
 - e. Revising paragraph (h)(19)(i)(A) to read as follows:

§ 141.24 Organic chemicals, sampling and analytical requirements.

* * * * *

(e) * * * EPA Draft Methods 515.3 and 549.2 are available from U.S. Environmental Protection Agency, National Exposure Research Laboratory (NERL)-Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268. ASTM Method D 5317-93 is available in the *Annual Book of ASTM Standards*, 1996, Vol. 11.02, American Society for Testing and Materials, 101 Barr Harbor Drive, West Conshohocken, PA 19428, or in any edition published after 1993.

Contaminant	Method ¹
2,4-D ⁴ (as acid, salts and esters)	515.2, 555, 515.1, 515.3, D5317-93 ⁵
2,4,5-TP ⁴ (Silvex)	515.2, 555, 515.1, 515.3, D5317-93 ⁵
Dinoseb ⁴	515.2, 555, 515.1, 515.3

Contaminant	Method ¹
Diquat	549.2
Pentachlorophenol	515.2, 525.2, 555, 515.1, 515.3, D5317-93 ⁵
Picloram ⁴	515.2, 555, 515.1, 515.3, D5317-93 ⁵

⁴Accurate determination of the chlorinated esters requires hydrolysis of the sample as described in EPA Methods 515.1, 515.2, 515.3 and 555, and ASTM Method D5317-93.

⁵Use of ASTM D5317-93 requires that the variable control limit for the laboratory fortified blank (LFB), which is specified in section 6g of D5317-93, be superseded by the fixed upper control limit of ±30%, which is specified in sections 9.3.2 and 9.7.2 of EPA Method 515.1 (Rev. 4.1).

(f) * * *
(17) * * *
(i) * * *

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

* * * * *

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

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

* * * * *

(h) * * *
(19) * * *
(i) * * *

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

* * * * *

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

§ 141.28 Certified laboratories.

(a) For the purpose of determining compliance with §§ 141.21 through

141.27, 141.30, 141.40, 141.74 and 141.89, samples may be considered only if they have been analyzed by a laboratory certified by the State except that measurements for alkalinity, calcium, conductivity, disinfectant residual, orthophosphate, pH, silica, temperature and turbidity may be performed by any person acceptable to the State."

* * * * *

6. Section 141.40 is amended by revising the last sentence in paragraph (n)(11), entry for "dicamba" in paragraph (n)(11), and by adding two footnotes to the table in paragraph (n)(11) to read as follows:

§ 141.40 Special monitoring for inorganic and organic chemicals.

* * * * *

(n) * * *
(11) * * * A source for ASTM D5317-93, APHA method 6610 and for EPA Methods 505, 507, 508, 508.1, 515.2, 515.3, 525.2 and 531.1 is referenced at § 141.24(e).

Contaminants	Method
dicamba ¹	515.2, 555, 515.1, 515.3, D5317-93 ²

¹Accurate determination of the chlorinated esters requires hydrolysis of the sample as described in EPA Methods 515.1, 515.2, 515.3 and 555, and ASTM Method D5317-93.

²Use of ASTM D5317-93 requires that the variable control limit for the laboratory fortified blank (LFB), which is specified in section 6g of D5317-93, be superseded by the fixed upper control limit of ± 30%, which is specified in sections 9.3.2 and 9.7.2 of EPA Method 515.1 (Rev. 4.1).

* * * * *

7. Section 141.74 is amended by revising the table and footnotes in paragraph (a)(1) to read as follows:

§ 141.74 Analytical and monitoring requirements.

(a) * * *
(1) * * *

Organism	Methodology	Citation ¹
Total Coliform ²	Total Coliform Fermentation Technique ^{3,4,5}	9221A, B, C
	Total Coliform Membrane Filter Technique ⁶	9222A, B, C
	ONPG-MUG Test ⁷	9223
Fecal Coliforms ²	Fecal Coliform Procedure ⁸	9221E
	Fecal Coliform Filter Procedure	9222D
Heterotrophic bacteria ²	Pour Plate Method	9215B
Turbidity	Nephelometric Method	2130B
	Nephelometric Method	180.1 ⁹
	Great Lakes Instruments	Method 2 ¹⁰

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

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

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

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

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

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

⁶ MI agar also may be used. Preparation and use of MI agar is set forth in the article, "New medium for the simultaneous detection of total coliform and *Escherichia coli* in water" by Brenner, K.P., et al., 1993, *Appl. Environ. Microbiol.* 59:3534-3544.

⁷ 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).

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

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

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

8. Section 141.89 is amended by revising paragraph (a)(1) introductory text and (a)(1)(i) to read as follows:

§ 141.89 Analytical methods.
* * * * *

(a) * * *
(1) Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be

performed by any person acceptable to the State. Analyses under this section for lead and copper shall only be conducted by laboratories that have been certified by EPA or the State. To obtain certification to conduct analyses for lead and copper, laboratories must:

- (i) Analyze Performance Evaluation samples, which include lead and

copper, provided by or acceptable to EPA or the State at least once a year by each method for which the laboratory desires certification; and

* * * * *

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