

§ 141.144

40 CFR Ch. I (7-1-00 Edition)

Chapter VIII of "ICR Microbial Laboratory Manual", EPA 600/R-95/178, April 1996, for each water sample identified in paragraph (b)(3) (i) or (ii) of this section.

(i) Samples of treatment plant influent and finished water, for every month after the PWS learns that viruses were detected in any previous sample of finished water.

(ii) Samples of treatment plant influent and finished water, regardless of whether viruses are detected in the finished water, for every month after the PWS learns that a density of at least 10 viruses/L was detected in any previous treatment plant influent water sample.

(iii) A PWS may arrange to have virus samples shipped directly to EPA by its virus laboratory for archiving.

(iv) Samples shall be sent on dry ice to ICR Virus Archiving Coordinator following the procedures specified in "ICR Microbial Laboratory Manual", EPA 600/R-95/178, April 1996.

(c) *Reporting.* (1) A PWS shall report data and information required under paragraphs (a) and (b) of this section using an EPA-specified computer readable format. A PWS shall submit a monthly report on a diskette, no later than the fourth month following sampling, that indicates the analytical results of all samples collected. Reports shall include PWSID, ICR plant identification, sample date, analysis date, laboratory identification numbers, analytical methods used, sample identification numbers, analytical batch numbers, quality assurance code, and processing batch numbers, if appropriate.

(2)(i) For a PWS using the alternative to *Giardia* and *Cryptosporidium* monitoring in paragraph (a)(2)(iii) of this section, the PWS shall report to EPA the mean value in each size range of the 12 particle counting values collected over the sampling period. In addition, during the four consecutive months when the PWS collects *Giardia* and *Cryptosporidium* samples specified in paragraph (a)(2)(iii)(B) of this section, the PWS shall report to EPA, for each measured site, the densities of *Giardia* and *Cryptosporidium* at each measured site. This information shall be submitted at the same time as the

report required by paragraph (c)(1) of this section.

(ii) A PWS that is not required to monitor for total culturable viruses under the provisions of paragraph (a)(2)(iv) of this section shall report to EPA the dates and results of all total coliform, fecal coliform, or *E. coli* monitoring used by the PWS to determine that additional virus monitoring is unnecessary. The report shall indicate all data collected during the six-month time period, and how the data were used to calculate compliance with this requirement.

(3) *Additional Requirements.* A PWS shall submit a microbiological sampling plan for EPA approval, using software provided by EPA, for each treatment plant specified in §141.141(b) of this subpart that indicates sampling point locations and monitoring to be conducted at each point. This sampling plan shall be submitted to EPA at the same time and on the same diskette as the DBP and related monitoring sampling plan required by §141.142(c)(2) and no later than eight weeks after the PWS receives the Notice of ICR Final Applicability Determination from EPA, using the procedure specified in "ICR Sampling Manual", EPA 814-B-96-001, April 1996.

(4) All reports required by this section shall be submitted to USEPA (ICR4600), ICR Data Center, Room 1111 East Tower, 401 M Street SW., Washington, DC 20460.

(5) The PWS shall keep all data for at least three years following data submission to EPA.

§141.144 Disinfection byproduct precursor removal studies.

(a) *TOC, UFCTOX, THM4, and HAA5 applicability monitoring.* A PWS required to comply with this section shall conduct TOC, UFCTOX, THM4, and HAA5 monitoring specified in §141.141(e)(2) of this subpart. A PWS may use monitoring results from samples required by §141.142(a) of this subpart to meet this requirement to the extent that all requirements in each section are met.

(b) *Treatment study requirements.* A PWS identified in §141.141(b) of this subpart shall conduct disinfection byproduct precursor removal studies (treatment studies). The treatment

study shall use bench-and/or pilot-scale systems for at least one of the two appropriate candidate technologies (GAC or membrane processes) for the reduction of organic DBP precursors. The treatment studies shall be designed to yield representative performance data and allow the development of national treatment cost estimates for different levels of organic disinfection byproduct control. The treatment objective of the studies is the achievement of levels of byproducts less than 40 µg/L TTHM and 30 µg/L HAA5, as an annual average. The treatment study shall be conducted with the effluent from treatment processes already in place that remove disinfection byproduct precursors and TOC, to simulate the most likely treatment scenario. PWSs are permitted to optimize these processes or pilot additional processes appropriate for pretreatment for treatment studies. In order to minimize the formation of DBPs, the test water for both the bench- and pilot-scale tests shall be obtained from a location before the first point at which oxidants or disinfectants that form halogenated disinfection byproducts are added. If the use of these oxidants or disinfectants precedes any full-scale treatment process that removes disinfection byproduct precursors, then bench- and pilot-scale treatment processes that represent these full-scale treatment processes are required prior to the GAC or membrane process. A PWS should exercise sound judgement in its selection of treatment process to study and the point at which to obtain water for study. Depending upon the type of treatment study, the study shall be conducted in accordance with the following criteria.

(1) Bench-scale tests are continuous flow tests using rapid small scale column test (RSSCT) for GAC and small scale membrane test apparatus as specified in "ICR Manual for Bench- and Pilot-scale Treatment Studies" (EPA 814-B-96-003, April 1996).

(i) GAC bench-scale testing shall include information on the experimental conditions and results necessary to adequately determine the scaled-up breakthrough curves under the conditions of each RSSCT. At least two empty bed contact times (EBCTs) shall

be tested using the RSSCT. These RSSCT EBCTs shall be designed to represent a full-scale EBCT of 10 min and a full-scale EBCT of 20 min. Additional EBCTs may be tested. The RSSCT testing is described in the "ICR Bench- and Pilot-scale Treatment Study Manual" (EPA 814-B-96-003, April 1996). The RSSCT tests at each EBCT shall be run quarterly to ascertain the impact of seasonal variation. Thus a total of four RSSCTs at each EBCT should be run. When seasonal variation is not significant, as is the case in most ground waters, the quarterly tests should be run to investigate other variables, as described in the "ICR Bench- and Pilot-scale Treatment Study Manual" (EPA 814-B-96-003, April 1996). The RSSCT shall be run until the effluent TOC concentration is at least 70% of the average influent TOC concentration or the effluent TOC reaches a plateau at greater than 50% of the influent TOC (i.e., the effluent TOC does not increase over a two-month full-scale-equivalent time period by more than 10% of the average influent TOC concentration) or a RSSCT operation time that represents the equivalent of one year of full-scale operation, whichever is shorter. The average influent TOC is defined as the running average of the influent TOC at the time of effluent sampling. If, after completion of the first quarter RSSCTs, the PWS finds that the effluent TOC reaches 70% of the average influent TOC within 20 full-scale equivalent days on the EBCT=10 min test and within 30 full-scale equivalent days on the EBCT=20 min test, the last three quarterly tests shall be conducted using membrane bench-scale testing with only one membrane, as described in paragraph (b)(1)(ii) of this section.

(ii) Membrane bench-scale testing shall include information on the experimental conditions and results necessary to determine the water quality produced by the membrane treatment and a preliminary estimate of productivity. The testing procedures and monitoring and reporting requirements are described in the "ICR Bench- and Pilot-scale Treatment Study Manual" (EPA 814-B-96-003, April 1996). A minimum of two different membrane types with nominal molecular weight cutoffs

of less than 1000 shall be investigated. Membrane tests shall be conducted quarterly over one year to determine the seasonal variation. Thus, a total of four bench-scale tests with each membrane shall be run. If seasonal variation is not significant, as is the case of most ground waters, the quarterly tests should be run to evaluate the impact of other variables, such as pretreatment, or additional membranes could be tested. Alternatively, a PWS may choose to conduct a long-term, single element study using a single membrane type in lieu of evaluating two membranes in four quarterly short-term tests, using the protocol in the "ICR Bench- and Pilot-scale Treatment Study Manual" (EPA 814-B-96-003, April 1996).

(2) A PWS shall conduct pilot-scale testing as continuous flow tests. For GAC, the PWS shall use GAC of particle size representative of that used in full-scale practice, a pilot GAC column with a minimum inner diameter of 2.0 inches, and hydraulic loading rate (volumetric flow rate/column cross-sectional area) representative of that used in full-scale practice. The PWS shall design a pilot-scale membrane system as a staged array of elements as described in "ICR Manual for Bench- and Pilot-scale Treatment Studies", EPA 814-B-96-003, April 1996.

(i) GAC pilot-scale testing. (A) The pilot testing procedures and monitoring and reporting requirements are prescribed in the "ICR Bench- and Pilot-scale Treatment Study Manual" (EPA 814-B-96-003, April 1996).

(B) At least two EBCTs shall be tested, EBCT=10 min and EBCT=20 min, using the pilot-scale plant. Additional EBCTs may be tested.

(C) The pilot tests at each EBCT shall continue until the effluent TOC concentration is at least 70% of the average influent TOC concentration on two consecutive TOC sample dates that are at least two weeks apart or the effluent TOC reaches a plateau at greater than 50% of the influent TOC (i.e., the effluent TOC does not increase over a two-month period by more than 10% of the average influent TOC concentration). If either of these criteria is met for the 20-minute EBCT prior to six months run time, a second pilot test at

each EBCT shall be conducted following the same sampling requirements. In all cases the maximum length of the pilot study (one or two tests) is one year. The average influent TOC is defined as the running average of the influent TOC at the time of sampling. The pilot-scale testing shall be timed to capture seasonal variation. If seasonal variation is not significant, as is the case with most ground waters, the pilot-scale test runs shall be designed to evaluate the impact of other variables, such as pretreatment.

(ii) Membrane pilot-scale testing.

(A) The membrane pilot testing procedures and monitoring and reporting requirements are prescribed in the "ICR Bench- and Pilot-scale Treatment Study Manual" (EPA 814-B-96-003, April 1996).

(B) The membrane test system shall be designed to yield information on loss of productivity (fouling), pretreatment requirements, cleaning requirements, and permeate quality and operated at a recovery representative of full-scale operation.

(C) The pilot-scale testing shall be run for one year.

(3) Chlorination under simulated distribution system (SDS) conditions shall be used prior to the measurement of THM4, HAA6, TOX, and chlorine demand. These conditions are described in "ICR Manual for Bench- and Pilot-scale Treatment Studies" (EPA 814-B-96-003, April 1996) and represent the average conditions in the distribution system at that time with regard to holding time, temperature, pH, and chlorine residual. If chlorine is not used as the final disinfectant in practice, then a chlorine dose shall be set to yield a free chlorine residual of 1.0 to 0.5 mg/l after a holding time, temperature, and pH equal to those representative of the distribution system averages.

(c) *Analytical Methods.* All analyses required by paragraphs (a) and (b) of this section shall be conducted using the methods and the mandatory analytical and quality control procedures contained in either "DBP/ICR Analytical Methods Manual" (EPA 814-B-96-002, April 1996) or "ICR Manual for Bench- and Pilot-scale Treatment Studies" (EPA 814-B-96-003, April 1996).

In addition, TOC analyses required by paragraph (a) of this section shall be conducted by a laboratory approved under the provisions of §141.142(b)(2) of this subpart.

(d) *Reporting.* (1) TOC and UFCTOX reporting. A PWS shall submit the monthly results of 12 months of TOC or UFCTOX monitoring required by paragraph (a)(1) of this section and the annual average of those monthly results not later than October 14, 1997. This report is not required to be submitted electronically. Although a PWS may use monitoring results from samples required by §141.142(a) of this subpart to meet this requirement, it shall submit separate reports to meet this reporting requirement and the reporting requirement in §141.142(c)(1) of this subpart.

(2) A PWS shall report all data collected under the provisions of paragraph (b) of this section. In addition, a PWS shall report the information for water resource and full-scale and pilot- or bench-scale pretreatment processes that precede the bench/pilot systems. These data and information shall be reported in the format specified in "ICR Manual for Bench- and Pilot-scale Treatment Studies" (EPA 814-B-96-003, April 1996) not later than July 14, 1999.

(3) All reports required by this section shall be submitted to USEPA, Technical Support Division, ICR Precursor Removal Studies Coordinator, 26 West Martin Luther King Drive, Cincinnati, OH 45268.

Subpart O—Consumer Confidence Reports

SOURCE: 63 FR 44526, Aug. 19, 1998, unless otherwise noted.

§ 141.151 Purpose and applicability of this subpart.

(a) This subpart establishes the minimum requirements for the content of annual reports that community water systems must deliver to their customers. These reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner.

(b) Notwithstanding the provisions of §141.3, this subpart applies only to community water systems.

(c) For the purpose of this subpart, *customers* are defined as billing units or service connections to which water is delivered by a community water system.

(d) For the purpose of this subpart, *detected* means: at or above the levels prescribed by §141.23(a)(4) for inorganic contaminants, at or above the levels prescribed by §141.24(f)(7) for the contaminants listed in §141.61(a), at or above the level prescribed by §141.24(h)(18) for the contaminants listed in §141.61(c), and at or above the levels prescribed by §141.25(c) for radioactive contaminants.

(e) A State that has primary enforcement responsibility may adopt by rule, after notice and comment, alternative requirements for the form and content of the reports. The alternative requirements must provide the same type and amount of information as required by §§141.153 and 141.154, and must be designed to achieve an equivalent level of public information and education as would be achieved under this subpart.

(f) For purpose of §§141.154 and 141.155 of this subpart, the term "primacy agency" refers to the State or tribal government entity that has jurisdiction over, and primary enforcement responsibility for, public water systems, even if that government does not have interim or final primary enforcement responsibility for this rule. Where the State or tribe does not have primary enforcement responsibility for public water systems, the term "primacy agency" refers to the appropriate EPA regional office.

§ 141.152 Effective dates.

(a) The regulations in this subpart shall take effect on September 18, 1998.

(b) Each existing community water system must deliver its first report by October 19, 1999, its second report by July 1, 2000, and subsequent reports by July 1 annually thereafter. The first report must contain data collected during, or prior to, calendar year 1998 as prescribed in §141.153(d)(3). Each report thereafter must contain data collected during, or prior to, the previous calendar year.