

*(This ADEQ document matches the official rulemaking published at 4 A.A.R. 2027)*

**NOTICE OF FINAL RULEMAKING**

**TITLE 18. ENVIRONMENTAL QUALITY**

**CHAPTER 4. DEPARTMENT OF ENVIRONMENTAL QUALITY**

**SAFE DRINKING WATER**

**PREAMBLE**

<b>1.</b>	<b><u>Sections Affected</u></b>	<b><u>Rulemaking Action</u></b>
	R18-4-101	Amend
	R18-4-102	Amend
	R18-4-103	Amend
	R18-4-104	Amend
	R18-4-105	Amend
	R18-4-109	Amend
	R18-4-116	Amend
	R18-4-117	Amend
	R18-4-119	Amend
	R18-4-121	Amend
	R18-4-201	Amend
	R18-4-205	Amend
	R18-4-206	Amend
	R18-4-208	Amend
	R18-4-209	Amend
	R18-4-212	Amend
	R18-4-213	Amend
	R18-4-215	Amend

<b>Sections Affected</b>	<b>Rulemaking Action</b>
R18-4-216	Amend
R18-4-217	Amend
R18-4-218	Amend
R18-4-219	Amend
R18-4-302	Amend
R18-4-303	Amend
R18-4-307	Amend
R18-4-310	Amend
R18-4-311	Amend
R18-4-314	Amend
R18-4-316	Amend
R18-4-402	Amend
R18-4-403	Repeal
R18-4-403	New Section
R18-4-504	Amend
Appendix A	Amend
Appendix B	Repeal
Appendix C	Re-number

**2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):**

A.R.S. §49-202(A), §49-203(A)(8), and §49-351 [authorizing statutes]

A.R.S. §49-352, §49-353, and §49-353.01 [statute the rules implement]

**3. The effective date of the rules:** The rules shall be effective on the date they are filed with the Office of the Secretary of State as prescribed by A.R.S. §41-1031(A) and §41-1032.

**4. A list of all previous notices appearing in the Register addressing the final rule:**

The Notice of Docket Opening for this rulemaking was published in Volume 2, Issue #49 of the Arizona Administrative Register on December 6, 1996, pp. 4928-29.

The Notice of Proposed Rulemaking was published in Volume 3, Issue #3 of the Arizona Administrative Register on January 17, 1997, pp. 182-218.

**5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:**

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**6. An explanation of the rule, including the agency's reasons for initiating the rule:**

ADEQ adopted the following revisions to the rules which regulate public water systems: 1) a repeal of the maximum contaminant level and mandatory health effect language for nickel, 2) the establishment of less stringent monitoring requirements for nickel to replace the current monitoring requirements for nickel that are prescribed in R18-4-206, 3) a clarification that the maximum contaminant levels for arsenic and radiochemicals apply only to drinking water that is distributed by community water systems, 4) amendments to the monitoring requirements for radiochemicals that are prescribed in R18-4-217 to make the requirements more consistent with radiochemical monitoring requirements found in the National Primary Drinking Water Regulations. The revised R18-4-217 requires monitoring for radiochemicals at the point-of-entry into the distribution system instead of at the source and it clarifies how monitoring for gross alpha particle radioactivity may be used as a substitute for radium-226 and radium-228 monitoring, 5) amendment of R18-4-119 which regulates additives to drinking water to conform the rule to A.R.S. §49-353.01 and to provide exemptions for certain materials and products which come into contact with drinking water from requirements to comply with National Sanitation Foundation standards,

6) a repeal of the special monitoring requirements for water corrosivity characteristics, 7) a clarification that vinyl chloride samples and samples that are screened for polychlorinated biphenyls [PCBs] using EPA Methods 505 and 508 cannot be composited, 8) establishment of limits for the reporting of compliance data, 9) a clarification of the requirements for increased monitoring for nitrate and nitrite, 10) a clarification that the maximum contaminant level for PCBs is quantitated as decachlorobiphenyl, and 11) a repeal of Appendix B which prescribes detection limits. ADEQ also adopted numerous minor technical amendments to clarify the currently effective drinking water rules, eliminate unnecessary language, correct cross-references, and update incorporations by reference. Finally, ADEQ made numerous editorial changes to the rules in response to extensive staff comments from the Governor's Regulatory Review Council. These changes were made primarily to make the rules clear, concise, and understandable and to conform the rule language to the rule drafting style guidelines that have been published by the Office of the Secretary of State.

*Repeal of the Maximum Contaminant Level for Nickel*

On July 17, 1992, the U.S. Environmental Protection Agency [EPA] promulgated a maximum contaminant level for nickel of 0.1 mg/L [See 57 Federal Register 31776]. EPA also promulgated associated monitoring, analytical testing, public notification requirements, and best available treatment technologies for nickel. These requirements were incorporated into Arizona's drinking water rules in state rules that were effective on April 28, 1995.

In September, 1992, the Nickel Development Institute (a nickel trade association) and other industry parties filed a petition for review in the U.S. Court of Appeals for the D.C. Circuit challenging the maximum contaminant level goal [MCLG] and the maximum contaminant level [MCL] for nickel [See Nickel Development Institute, et. al v. EPA (No. 92-1407) and Specialty Steel Industry of the United States v. Browner (No. 92-1410)]. The industry petitioners raised objections concerning the methodology that was used to determine the MCLG for nickel. Because the MCL for nickel was based directly on the MCLG, the petitioners also challenged the MCL for nickel. EPA and the petitioners entered into discussions in an

attempt to settle this litigation. In the course of these discussions, EPA agreed that it had not fully addressed the petitioners' comments on the methodology for deriving the MCLG for nickel in the rulemaking record and EPA agreed to a voluntary remand of the MCLG and MCL for nickel. The court granted the parties' joint motion for a voluntary remand of the MCLG and MCL for nickel and dismissed the lawsuits. When the court vacated the MCL for nickel, it left the sampling methodologies and detection limits for nickel in place. At EPA's request, the court also vacated the mandatory health effects language for nickel because: 1) the language mentions the nickel MCL, and 2) the language is unnecessary until EPA reestablishes a nickel MCL. No other aspects of the National Primary Drinking Water Regulations for nickel were vacated by the court. EPA has stated in the Federal Register that the nickel MCL should be considered vacated and not in effect as of February 23, 1995 [See 60 Federal Register 33929 (June 29, 1995)]. EPA formally removed the nickel MCL from the Code of Federal Regulations [Id]. For these reasons, ADEQ adopted a rule which repeals the MCL for nickel that is found in R18-4-205 and the mandatory health effects language for nickel found in Appendix A.

*Establish Less Stringent Monitoring Requirements for Nickel at R18-4-403*

ADEQ adopted R18-4-403 which establishes less stringent monitoring requirements for nickel. As explained in the previous section, the Court of Appeals for the D.C. Circuit did not vacate the sampling methodologies and detection limits for nickel and EPA has not repealed the monitoring requirements for nickel in the National Primary Drinking Water Regulations. Therefore, ADEQ adopted a new section, R18-4-403, which prescribes special monitoring requirements for nickel. The special monitoring requirements for nickel are less stringent than the current nickel monitoring requirements that are found in R18-4-206 because they do not include any increased monitoring requirements which are triggered by an exceedance of the MCL for nickel. Increased monitoring requirements which are triggered by a MCL exceedance are now obsolete because the MCL for nickel has been vacated. The special monitoring requirements for nickel are properly located in Article 4 because they are no longer related to determining compliance with a maximum contaminant level.

*Amendment of Applicability of Maximum Contaminant Levels for Arsenic and Radiochemicals*

EPA amended the National Primary Drinking Water Regulations to clarify that the maximum contaminant level for arsenic applies only to community water systems [See 40 CFR §141.11(a)]. ADEQ revised R18-4-201 in this rulemaking to make this clarification. ADEQ also amended R18-4-201 to clarify that the maximum contaminant levels for radiochemicals apply only to drinking water that is distributed by a community water system. The maximum contaminant levels for radiochemicals do not apply to drinking water distributed by noncommunity water systems [See 40 CFR §141.15 and 40 CFR §141.16].

*Amendment of the Radiochemical Rule [R18-4-217]*

ADEQ amended R18-4-217 to make the monitoring requirements in the rule more consistent with the current National Primary Drinking Water Regulation for radiochemicals at 40 CFR §141.26. ADEQ did not make any changes to the current maximum contaminant levels for radium-226, radium 228, gross alpha particle radioactivity, or beta particle and photon radioactivity from man-made radionuclides.

The current state rule, R18-4-217(B)(1), requires that a community water system monitor each *source* for radiochemicals at four-year intervals. ADEQ amended this rule to require that a community water system monitor for radiochemicals at *points-of-entry* to the distribution system. This change from source monitoring to point-of-entry monitoring is consistent with the way that monitoring is conducted by public water systems for other categories of contaminants under the standardized monitoring framework [See R18-4-218]. Also, sampling at the point-of-entry to the distribution system appears to be more consistent with the way that the current National Primary Drinking Water Regulation addresses monitoring requirements for radiochemicals. First, 40 CFR §141.26(a)(2)(iii) provides that a state has the *discretion* to order source water monitoring when a community water system uses two or more sources having different concentrations of radioactivity. This federal regulation implies that routine monitoring for radiochemicals is not conducted at the source because it states that source water monitoring is discretionary. If source water monitoring is discretionary, then routine monitoring for radiochemicals must be conducted at a location other than at the source. Second, 40 CFR §141.26(a)(3)(iii) states that source water monitoring is in addition to monitoring

of drinking water “from a free-flowing tap.” This reference in the federal regulation suggests that routine monitoring for radiochemicals is conducted at locations in the drinking water distribution system. Finally, point-of-entry sampling for radiochemicals is consistent with the monitoring approach set forth by EPA in proposed regulations for radiochemicals [See 56 Federal Register 33050 (July 18, 1991)]. In the preamble to the proposed federal radiochemical regulations, EPA states that one of its major goals is to make monitoring requirements for radiochemicals consistent with the monitoring requirements for other regulated drinking water contaminants as described in EPA’s standardized monitoring framework [Id. at 33103]. EPA proposed that public water systems sample for radiochemicals at points in the distribution system which were representative of each source [i.e., at each entry point to the distribution system which is located after any treatment and which is representative of each source (Id. at 33104) ]. While EPA’s proposed regulations for radiochemicals have not been finalized, they reflect an EPA intention to adopt a point-of-entry monitoring approach for radiochemicals.

The adoption of a point-of-entry monitoring approach for radiochemicals will reduce radiochemical monitoring costs for community water systems. If point-of-entry sampling is adopted for radiochemicals, then it will reduce the number of sampling sites for community water systems. Also, the same sampling sites may be used for the collection of samples for other contaminants such as inorganic chemicals and volatile organic chemicals, which simplifies sample collection efforts. For both of these reasons, ADEQ has repealed source monitoring and adopted point-of-entry monitoring for radiochemicals.

ADEQ also amended the monitoring requirements for radiochemicals to clarify that monitoring for gross alpha particle radioactivity may be substituted for radium-226 and radium-228 monitoring. This revision conforms the state rule to 40 CFR §141.26(a)(1)(i) and (ii). Under the National Primary Drinking Water Regulation, gross alpha particle radioactivity monitoring may be substituted for radium-226 and radium-228 monitoring provided that the gross alpha particle radioactivity measurement does not exceed 5 pCi/L. If the gross alpha particle radioactivity measurement exceeds 5 pCi/L, then a water supplier must have the same or an equivalent sample analyzed for radium-226. If the concentration of radium-226 in the

sample exceeds 3 pCi/L, then the water supplier must have the same sample analyzed for radium-228 [See 40 CFR §141.26(a)(1)(ii)]. If a gross alpha particle activity measurement exceeds 15 pCi/L, then a water supplier must have the same sample analyzed for uranium to determine compliance with the maximum contaminant level for adjusted gross alpha particle radioactivity that is prescribed at R18-4-217(A)(2). The current state rule does not clearly state that monitoring for gross alpha particle radioactivity may be substituted for radium-226 and radium-228 monitoring. Also, the current state rule requires follow-up monitoring for *combined* radium-226 and radium-228 when a gross alpha particle radioactivity measurement exceeds 5 pCi/L. Follow-up monitoring for *combined* radium-226 and radium-228 is inconsistent with 40 CFR §141.26(a)(1)(ii), which requires follow-up monitoring for radium-226 only.

ADEQ amended the subsections of R18-4-217 that prescribe the monitoring requirements for man-made radionuclides. ADEQ amended the subsections to clarify that the only public water systems that are required to monitor for man-made radionuclides are: 1) surface water systems that serve more than 100,000 persons, and 2) community water systems (including groundwater systems) that the Department determines are subject to potential health risk from man-made radionuclides. ADEQ amended the rule to clarify that the public water systems that are subject to the rule must monitor every four years for gross beta particle radioactivity, Tritium, and Strontium-90. The amended rule more clearly describes how ADEQ determines compliance with the MCLs for man-made radiochemicals. ADEQ also amended the subsections of the rule that prescribe the monitoring requirements for public water systems that utilize water that may be contaminated by effluent from a nuclear facility [See R18-4-217(H)].

ADEQ reorganized the radiochemical rule to clarify what the increased monitoring requirements are when a maximum contaminant level for a radiochemical is exceeded [See R18-4-217(C)]. The rule clearly states the circumstances under which ADEQ may order increased monitoring for radiochemicals [See R18-4-217(D)]. It also clearly identifies the requirements that a water supplier must meet to qualify for reduced radiochemical monitoring [See R18-4-217(E)].

*Amendment of the Additives Rule [R18-4-119]*

ADEQ amended the additives rule at R18-4-119 to conform the rule to recently enacted state legislation, eliminate obsolete cross-references, and update incorporations by reference. In the Second Regular Session of the 42nd Legislature, the Arizona legislature enacted Senate Bill 1275 into law. S.B. 1275 includes A.R.S. §49-353.01 which requires that the Director of ADEQ adopt rules which prescribe minimum standards for equipment and materials which come into contact with drinking water that is sold or distributed to the public. The new law states that chemicals, materials, or equipment that have been certified by the National Sanitation Foundation [NSF] meet the requirements of S.B. 1275. The law also provides that in those instances where chemicals, materials, and equipment that come into contact with drinking water are essential to the design, construction, or operation of a drinking water system and they have not been NSF-certified or where they may be NSF-certified but are available only from one source, then the state drinking water rules must allow the use of alternatives. A.R.S. §49-353.01 lists the alternatives that must be included in the rules. These are:

1. Products composed entirely of ingredients determined by the U.S. Environmental Protection Agency, the Food and Drug Administration, or other federal agencies as appropriate for addition to potable water or aqueous food;
2. Products composed entirely of ingredients listed in the National Academy of Sciences “Water Chemicals Codex;”
3. Products that are consistent with the specifications of the American Water Works Association;

4. Products that are designed for use in drinking water systems that are consistent with the specifications of the American Society for Testing and Materials; and
5. Products that have been used historically or which are in use in drinking water systems, consistent with standard practice, which have not been demonstrated during past applications in the United States to contribute to water contamination.

ADEQ amended the additives rule by adding a new subsection (D) which restates A.R.S. §49-353.01 verbatim.

ADEQ also added a new subsection (E) to clarify that certain materials and products which come into contact with drinking water do not have to comply with National Sanitation Foundation Standard 61. These materials and products include: 1) concrete structures, tanks, and treatment tank basins that are constructed on-site, which are not normally coated or sealed, and where the construction materials used in the concrete are consistent with R18-4-119(D); 2) earthen reservoirs and canals located prior to surface water treatment plants; 3) drinking water treatment plants constructed on-site or at a job shop that are comprised of components that comply with R18-4-119(B), (C), and (D); 4) galvanized steel tanks and synthetic tanks constructed of resins that less than 15,000 gallons in capacity, are used in public water systems with 500 or fewer service connections, and are approved by the Food and Drug Administration to be used in contact with drinking water or aqueous food; and 5) stainless steel pipes, treatment plant components, and water distribution system components.

ADEQ amended R18-4-119(A) to eliminate an obsolete reference to a January 1, 1993 compliance date.

The current rule states that: “[a]ll products added directly to drinking water during production or treatment *after January 1, 1993* shall conform to National Sanitation Foundation Standard 60.... [emphasis added]”

The reference to January 1, 1993 is unnecessary and ADEQ deleted it from the adopted rule.

ADEQ also amended R18-4-119(B). The current rule states that: “[m]aterials or products *used or installed*

*after January 1, 1993*, that come into contact with drinking water or with drinking water treatment chemicals shall conform to National Foundation Standard 61.” During the last rulemaking to revise the drinking water rules [i.e., the revisions that were effective April 28, 1995], ADEQ received a public comment on the additives rule which recommended the deletion of the word, “used,” in the phrase italicized in the previous sentence. The commenter pointed out that materials or products that were installed prior to January 1, 1993 but *used* after that date would have to be removed if they did not conform to NSF Standard 61. The commenter pointed out that this regulatory requirement could impose an enormous economic burden on public water systems to retrofit their systems with NSF-certified materials or products. At that time, ADEQ agreed that the word “used” should be deleted from R18-4-119(B). However, for reasons related to Attorney General certification of the drinking water rules during the 1995 rulemaking, ADEQ was unable to make the change to the rule. In this rulemaking, ADEQ revised the first sentence in R18-4-119(B) by deleting the word, “used.” The adopted rule states: “...materials or products installed after January 1, 1993 that come into contact with drinking water or with water treatment chemicals shall conform to American National Standards Institute / NSF International Standard 61-1997(b)....”

Finally, ADEQ updated the incorporations by reference of NSF Standards 60 and 61. The current rule incorporates NSF Standards 60 and 61, amended as of October, 1988. These incorporations by reference were updated because NSF Standard 60 was most recently revised in November, 1996. NSF Standard 61 was most recently amended in July, 1997.

#### *Repeal of the Special Monitoring Requirements for Water Corrosivity Characteristics*

The current state drinking water rules include R18-4-403, which prescribes special monitoring requirements for water corrosivity characteristics. ADEQ repealed this rule because EPA repealed the special monitoring requirements for water corrosivity characteristics in the National Primary Drinking Water Regulations [See 40 CFR §141.42 and 59 Federal Register 62463-64 (December 5, 1994)]. After the EPA repeal of the special monitoring requirements for water corrosivity characteristics, 40 CFR §141.42 requires that

community water systems identify whether certain construction materials are present in their drinking water distribution systems and report that information to the state. This reporting requirement is found in the state's current drinking water rules at R18-4-403(E). ADEQ proposed to relocate this reporting requirement to R18-4-104(T). However, in response to public comments, ADEQ adopted a version of R18-4-104 that does not include the construction materials reporting requirement proposed at R18-4-104(T) [For an explanation of ADEQ's reasons for not including the construction materials reporting requirement, see response to comments].

*Clarification of Sample Compositing Requirements for Vinyl Chloride and PCBs*

Special monitoring requirements apply to vinyl chloride. Under R18-4-213, community water systems and nontransient, noncommunity water system are not required to conduct routine monitoring for vinyl chloride. A public water system must conduct monitoring for vinyl chloride at a sampling point only if the system detects the presence of another specified volatile organic chemical [VOC] at that sampling point. Since monitoring for vinyl chloride is conducted at a sampling point only when triggered by a detection of another specified VOC, sample compositing is not allowed. ADEQ amended the sample compositing rule at R18-4-219(E)(3) to clarify that compositing of vinyl chloride samples is

prohibited.

ADEQ also adopted special sample compositing requirements for polychlorinated biphenyls [PCBs]. The rule permits the use of certain analytical methods, EPA Method 505 or EPA Method 508, to screen for the presence of PCBs in a drinking water sample. If a water supplier chooses to use one of these screening methods, the sample is screened for species of PCBs called Aroclors. If one of the Aroclors is detected in a concentration which exceeds the limit prescribed in the rule, the sample must be analyzed and quantitated for PCB as decachlorobiphenyl using EPA Method 508A. The rule clarifies that samples cannot be composited for analysis using EPA Methods 505 or 508. This is because the sample compositing rule, R18-4-219(A), states that sample compositing is allowed *only if the detection limit for the analytical method used for analysis is less than 1/5 of the maximum contaminant level for the contaminant*. EPA Methods 505 and 508 prescribe detection limits for the Aroclors, but the detection limits for the Aroclors cannot be compared with the maximum contaminant level for PCBs that is expressed as decachlorobiphenyl. The rules do not prescribe maximum contaminant levels for the Aroclors so the detection limits for the Aroclors cannot be compared with a MCL to determine if they are less than 1/5 of the MCL. For this reason, samples cannot be composited for analysis using EPA Methods 505 or 508. Samples may be composited for PCB analysis provided the method of analysis is EPA Method 508A. ADEQ revised the sample compositing rule at R18-4-219(E)(4) to make this clarification.

#### *Reporting Limits*

Water suppliers and laboratories submit analytical results to ADEQ and frequently report that regulated contaminants are “less than” stated concentrations [e.g., “< x” where x is a numeric concentration]. Under the current rules, the laboratories which do analyses of drinking water samples are not required to achieve prescribed levels of precision in their drinking water analyses. Consequently, analytical results may be submitted to ADEQ at concentrations that are not usable for compliance purposes. Because there are no reporting limits for “less than values” prescribed in rule, analytical results may be reported as “less than

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ADEQ added a new subsection (U) to the general reporting requirements that are prescribed in R18-4-104. ADEQ adopted a rule which establishes limits on the use of “less than values” in reporting analytical results to ADEQ. Reporting limits on “less than values” are necessary because, without them, a water supplier may submit compliance data which indicates that a regulated contaminant is less than a stated

concentration, but the “less than value” is unacceptably high for compliance purposes. If “less than values” are reported at concentrations that exceed MCLs or other regulatory trigger levels, then ADEQ cannot determine compliance with the drinking water rules. For example, the maximum contaminant level for nitrate is 10 mg/L. If compliance data for nitrate is reported as “<12 mg/L,” then ADEQ cannot determine compliance with the MCL for nitrate. The rule now states that water suppliers are prohibited from submitting compliance data expressed as “less than values” which exceed prescribed reporting limits. The new rule prescribes reporting limits for single point-of-entry samples and for composite samples. Water suppliers who submit analytical results that exceed the prescribed reporting limits will be required to resample or have the laboratory analysis of the sample done again.

For example, all community water systems must conduct monitoring to determine whether the drinking water they provide complies with the MCLs for synthetic organic chemicals. The rule which prescribes monitoring requirements for synthetic organic chemicals states that if a community water system detects certain synthetic organic chemicals in a concentration that is greater than or equal to 50% of the MCL, then the community water system must conduct more frequent monitoring for that contaminant.

Testing laboratories can detect and quantitate the concentrations of synthetic organic chemicals in drinking water samples with varying degrees of precision. Typically, a testing laboratory may report that a synthetic organic chemical is “not detected” or the concentration of the synthetic organic chemical in the sample is reported as less than a stated concentration which represents the detection limit or the practical quantitation level that can be achieved by the laboratory. Because there are no reporting limits prescribed in rule, a “less than value” may be reported at a concentration that exceeds the maximum contaminant level or a trigger level for increased monitoring, rendering the reported data useless for compliance purposes. The following hypothetical

illustrates this problem:

The Responsible Water Company is a community water system which is required to conduct monitoring to determine whether there are any synthetic organic chemicals in the drinking water that it provides to its customers. One of the synthetic organic chemicals that the Responsible Water Company must monitor for is alachlor. The maximum contaminant level for alachlor is 0.002 mg/L and the concentration which triggers increased monitoring is 0.001 mg/L [i.e., 50% of the MCL]. The Responsible Water Company sends its drinking water sample to the Accuracy Plus Testing Laboratory which is licensed by the Arizona Department of Health Services [ADHS] to conduct analyses of drinking water samples for the presence of alachlor. There are no state requirements that the Accuracy Plus Testing Laboratory achieve certain method detection limits in order to obtain or keep its license to conduct analyses of drinking water samples for alachlor. The Accuracy Plus Testing Laboratory conducts the analysis of the drinking water sample using an ADHS-approved method and reports the analytical results to ADEQ. Because there are no reporting limits in the rule, the Accuracy Plus Testing Laboratory reports that the concentration of alachlor in the drinking water sample is “<0.003 mg/L” [i.e., less than 0.003 mg/L] [For purposes of this hypothetical, assume that 0.003 mg/L represents the limit of detection for alachlor that the Accuracy Plus Testing Laboratory can achieve with its equipment]. ADEQ cannot determine from this analytical result whether the drinking water provided by the Responsible Water Company complies with the MCL for alachlor [0.002 mg/L] or whether the Responsible Water Company should be required to increase the frequency of monitoring for alachlor [i.e., the trigger level is 0.001 mg/L]. ADEQ cannot determine compliance because two equally valid conclusions can be drawn from an alachlor concentration that is reported as “<0.003 mg/L.” First, it is possible that there is no alachlor in the drinking water sample. The second possibility is that some alachlor is present in the drinking water sample, but in a concentration that is less than 0.003 mg/L. It is possible that alachlor is present in the sample in a concentration that exceeds the MCL of 0.002 mg/L or the trigger level of 0.001 mg/L for increased monitoring. The Accuracy Plus Testing Laboratory reports that the concentration of alachlor is less than 0.003 mg/L because that is the smallest concentration that the laboratory can “see” or quantify with its equipment. Another laboratory may be able to “see” or quantify alachlor in drinking water

samples with greater precision [e.g., the Really Good Laboratory can detect alachlor in concentrations as low as 0.001 mg/L]. However, there is nothing in the current drinking water rules which requires that the Accuracy Plus Testing Laboratory achieve the same level of precision as the Really Good Laboratory. The proposed subsection (U) addresses the reporting problem that is illustrated by the hypothetical case. Subsection (U) requires that the analytical results of compliance samples be reported by water suppliers with minimum levels of precision so ADEQ can determine compliance with the drinking water rules. In particular, subsection (U) prohibits the reporting of “less than values” at concentrations that are higher than MCLs and regulatory trigger levels. Subsection (U) prescribes the reporting limits for various parameters so that compliance data that is reported to ADEQ can be used to determine compliance with the drinking water rules. The rule prohibits the reporting of compliance data with “less than values” that exceed the prescribed reporting limits. As applied to the example in this section, the reporting limit for a single point-of-entry sample analysis for alachlor is established at the trigger level for increased monitoring, i.e., 0.001 mg/L. When the reporting limits in the rules become effective, a testing laboratory will not be able to report an analytical result for alachlor at a “less than value” which exceeds 0.001 mg/L. Thus, the Accuracy Plus Laboratory would be prohibited from reporting an analytical result for alachlor as “<0.003 mg/L,” because it is a “less than value” which exceeds the prescribed reporting limit for alachlor of 0.001 mg/L.

#### *Clarification of Increased Monitoring Requirements for Nitrate and Nitrite*

The current rule which prescribes monitoring requirements for nitrate, R18-4-208, includes a provision which requires increased monitoring if nitrate is detected at a groundwater sampling point in a concentration which is equal to or greater than 5 mg/L. R18-4-208(F) requires an increase in nitrate monitoring frequency from annually to quarterly. If increased monitoring is triggered at a sampling point, then a public water system must continue quarterly monitoring until the analytical results from four consecutive quarterly samples demonstrate that the concentration of nitrate in the water is less than the maximum contaminant level of 10 mg/L. If the quarterly monitoring results from 4 consecutive quarters demonstrate that the concentration of nitrate is reliably and consistently below the maximum contaminant level [i.e., < 10 mg/L], ADEQ may reduce the monitoring frequency at the sampling point from quarterly back to annually. ADEQ

added a sentence to R18-4-208(F) to clarify that once a public water system is triggered into increased monitoring and the quarterly monitoring results demonstrate that the concentration of nitrate is reliably and consistently below the maximum contaminant level, a subsequent detection of nitrate at the same sampling point in a concentration which is greater than or equal to 5 mg/L and less than 10 mg/L will not “retrigger” increased monitoring. ADEQ made a similar clarification to the increased monitoring requirements for nitrite at R18-4-209(G).

#### *Clarification of MCL for Polychlorinated Biphenyls as Decachlorobiphenyl*

The National Primary Drinking Water Regulations state that compliance with the maximum contaminant level for polychlorinated biphenyls [PCBs] shall be determined based upon the quantitative results of analyses using EPA Method 508A [See 40 CFR §141.24(h)(13)(iii)]. EPA Method 508A is used to quantitate PCBs as decachlorobiphenyl. ADEQ amended R18-4-215 to clarify that the maximum contaminant level for PCBs is expressed as decachlorobiphenyl.

#### *Appendix B. Detection Limits*

The current drinking water rules include an Appendix B which prescribes detection limits for different categories of pollutants. The detection limits are listed in Appendix B by pollutant category [e.g., volatile organic chemicals], or by individual pollutant [e.g., individual synthetic organic chemicals], and, in some cases, by analytical method [e.g. individual inorganic chemicals]. ADEQ repealed Appendix B because its purpose is unclear and its presence in the current rules confused the regulated community.

One of the original purposes of Appendix B was to support the sample compositing rule at R18-4-219. The sample compositing rule states at R18-4-219(A) that a public water system may composite up to 5 samples “provided the detection limit of the method used for analysis is less than one-fifth the maximum contaminant level for the contaminant.” ADEQ originally promulgated Appendix B to list the detection limits so public water systems and testing laboratories could compare the listed detection limits to the maximum contaminant levels for the various contaminants to determine whether samples could be

composited or not. Unfortunately, Appendix B does not accomplish this purpose very well for two reasons. First, Appendix B does not list detection limits for volatile organic chemicals or synthetic organic chemicals by analytical method. Only the detection limits listed for inorganic chemicals are listed by analytical method. Thus, it is impossible to determine from Appendix B whether “the detection limit *of the method used for analysis*” for a volatile organic chemical or a synthetic organic chemical is less than 1/5 of the maximum contaminant level for the contaminant. Second, approved analytical methods and method detection limits change over time. Appendix B was effective on April 28, 1995 and it is already outdated because new analytical methods have been approved by EPA for the analysis of drinking water parameters. For both of these reasons, ADEQ repealed Appendix B.

There are several references in the current rules to detection, but few of the references specifically cross-reference the detection limits that are prescribed in Appendix B. Even the current definition of the term, “detected,” at R18-4-101(20) does not cross-reference the detection limits that are prescribed in Appendix B. There is only one specific cross-reference to Appendix B in the current drinking water rules at R18-4-219(D)(3). R18-4-219(D)(3) in the current rules addresses follow-up sampling requirements if a synthetic organic chemical [SOC] is detected in a composite sample. R18-4-219(D)(3) states that follow-up samples must be taken if a SOC is detected in a composite sample in a concentration which exceeds “the detection limit for that synthetic organic chemical prescribed in Appendix B.” ADEQ agrees that follow-up sampling should be required for a composite SOC sample if an SOC is detected in a concentration which exceeds the method detection limit for the SOC that is prescribed in the National Primary Drinking Water Regulations. To be consistent with the federal regulations, ADEQ incorporated these detection limits as reporting limits for composite SOC samples.

Another purpose of Appendix B was to support rules that are prescribed in Chapter 4, Article 2 which tie certain monitoring requirements to the detection of regulated contaminants. For example, the rule which prescribes monitoring requirements for volatile organic chemicals [VOCs] states at R18-4-212(G) that if a VOC is not *detected* at a sampling point during initial monitoring, then a public water system can reduce the

monitoring frequency at that sampling point during repeat monitoring periods from quarterly monitoring to annual monitoring. While the language of R18-4-212(G) does not specifically relate detection of a VOC to the detection limit for VOCs that is prescribed in Appendix B [i.e., 0.0005 mg/L], ADEQ has always interpreted R18-4-212(G) to mean that a public water system may reduce monitoring for VOCs if the analytical results from the initial monitoring period demonstrate that the concentration of a VOC in each of the initial quarterly samples is less than the detection limit in Appendix B or 0.0005 mg/L. ADEQ concluded that it would be clearer to simply state in the text of R18-4-212(G) that a public water system may reduce monitoring frequency for a VOC if the VOC is not detected during initial monitoring in a concentration which equals or exceeds 0.0005 mg/L.

The current rules that prescribe reduced monitoring requirements for synthetic organic chemicals, R18-4-216(E) and R18-4-216(G) also allow reduced monitoring for a synthetic organic chemical [SOC] if a SOC is not *detected* during initial monitoring. Again, while the language of the R18-4-216(E) and R18-4-216(G) does not specifically cross-reference the detection limits that are prescribed in Appendix B for SOCs, ADEQ has interpreted these subsections to mean that a public water system may reduce monitoring for a SOC if the initial monitoring results demonstrate that the concentration of the SOC is less than the detection limit that is prescribed in Appendix B for that SOC. Again, it would clearer if ADEQ states in the text of the rule at R18-4-216(E) and R18-4-216(G) that a public water system may reduce monitoring frequency for a SOC if the SOC is not detected during

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*Changes made in response to staff comments from the Governor’s Regulatory Review Council*

ADEQ made numerous minor amendments to the drinking water rules to make them more clear, concise, and understandable. ADEQ deleted unnecessary language, corrected grammatical errors, replaced number words with numerals, changed passive voice to active voice, reorganized sections, updated incorporations by reference, and corrected cross-references. ADEQ made many editorial changes to the rules to conform the language to the rule drafting style guidelines of the Office of the Secretary of State. These changes are indicated in the adopted rule text by underlining and strikethroughs.

**7. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:**

Not applicable

**8. The summary of the economic, small business, and consumer impact:**

Under A.R.S. §41-1055(D), an agency is not required to prepare an economic, small business, and consumer impact statement if the rulemaking decreases monitoring, record keeping, or reporting burdens on agencies, political subdivisions, businesses, or persons unless the agency determines that the increased costs of implementation or enforcement

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Each of the substantive revisions to the drinking water rules and a discussion of their effect on the regulated community is discussed below.

The repeal of the maximum contaminant level [MCL] for nickel reduces the number of regulated inorganic chemicals. However, the current monitoring requirements for nickel remain largely unchanged. Community water systems and nontransient, noncommunity water systems still will have to monitor for nickel. Under the current rule, a public water system must increase monitoring frequency for nickel if the MCL is exceeded at a sampling point. The repeal of the MCL for nickel will eliminate increased monitoring due to an exceedance of the MCL for nickel. The special monitoring requirements for nickel that ADEQ adopted at R18-4-403 are identical to the current nickel monitoring requirements that are prescribed in R18-4-206, except that the adopted rule does not include any increased monitoring provisions. Therefore, the special monitoring requirements for nickel that are prescribed in R18-4-403 are less stringent than those found in the current rules and they represent a reduction in the monitoring burden for community water systems and nontransient, noncommunity water systems.

The limitation of the applicability of the maximum contaminant level for arsenic to community water systems will reduce monitoring requirements for nontransient, noncommunity water systems which must conduct monitoring for arsenic under the current rules. This rule change will reduce the monitoring burden for approximately 230 nontransient, noncommunity water systems.

The revisions to the rules which will have the most significant economic impact are the revisions to the monitoring requirements for radiochemicals in R18-4-217. The change from source monitoring to point-of-entry monitoring for radiochemicals will reduce monitoring requirements for community water systems with multiple sources of water that are combined before drinking water enters the distribution system. For

example, the public water system for the City of Tucson has 171 sources of water and 126 points-of-entry. The adoption of the proposed point-of-entry monitoring approach for radiochemicals will result in a reduction of 45 sampling points and a corresponding decrease in radiochemical monitoring costs. Similarly, the City of Scottsdale would see a reduction of 9 sampling points. In a brief survey of approximately 70 community water systems by ADEQ, approximately half of those systems will be able to reduce their radiochemical monitoring by 2 to 3 sampling points. The adoption of a point-of-entry

monitoring approach for radiochemicals cannot cause any increase in monitoring costs for any public water system, it can only reduce monitoring burdens for public water systems.

The revision of the additives rule at R18-4-119 will provide more regulatory flexibility to public water systems because the revised rule allows the use of alternative materials or products when National Sanitation Foundation-certified materials and products are unavailable or when those materials are available only from one source. This provision will give water suppliers the flexibility to use cost-effective alternative materials and products that are commercially available in the water works industry when there is only one supplier of an NSF-certified material or product. The adopted rule introduces more competition into the additives rule by allowing the use of alternative materials and products. Additional competition should result in lower costs to public water systems.

The repeal of the special monitoring requirements for water corrosivity characteristics will reduce monitoring burdens for community water systems. The repeal of R18-4-403 eliminates a provision which requires that a community water system conduct a one-time round of monitoring to determine water corrosivity characteristics. Public water systems will no longer have to conduct this monitoring. The repeal also eliminates unnecessary reporting requirements.

The establishment of reporting limits for analytical results in R18-4-104(U) is a codification of an existing compliance data policy that is currently being implemented by the ADEQ Drinking Water Section in cooperation with the Office of Laboratory Licensure, Certification, and Training of the Arizona Department of Health Services [ADHS]. ADHS has informed drinking water testing laboratories of the currently effective reporting limits policy through the publication of ADHS Information Update #28 [June 10, 1996]. ADEQ also published the reporting limits policy in the ADEQ Drinking Water Section's newsletter, Splash [See Vol. 1, No. 2, Summer, 1996]. The adopted rule

clarifies reporting requirements that are implied by existing maximum contaminant levels and other regulatory trigger levels that are prescribed in the current drinking water rules. Reporting limits are necessary adjuncts to the establishment of any MCL or regulatory trigger. Without such reporting limits, ADEQ cannot determine compliance with existing MCLs or regulatory triggers. The codification of the reporting limits policy does not establish new reporting requirements or increase the reporting burdens for drinking water testing laboratories and water suppliers. The adopted rule provides additional guidance on ADEQ's current compliance data policy. The promulgation of reporting limits may reduce monitoring costs because it may reduce the number of times that ADEQ rejects compliance data and requires laboratories to reanalyze samples or requires a water supplier to resample.

The clarification of sample compositing requirements and the other minor technical amendments to the drinking water rules that are proposed in this rulemaking will have no economic impact.

- 9. A description of the changes between the proposed rules, including supplemental notices, and final rules (if applicable):** ADEQ made many changes to the proposed rules. Sections of the proposed rules where changes were made are reproduced below. If there is a change to a section, then the relevant text of the section is reproduced *as proposed by ADEQ*. Please note that the language of the section as proposed by ADEQ may differ from the language of the current rule as it appears in the Arizona Administrative Code. The current rule is *not* reproduced in this part of the Notice of Final Rulemaking because the purpose of this part of the Notice of Final Rulemaking is to describe the changes between the proposed and the adopted rules. Changes between the language of proposed rule and the adopted rule are highlighted with **redlining**. Language that was deleted from the proposed rule is indicated by ~~strike-outs~~. Language that has been added to the proposed rule is indicated by underlining. If the proposed rule and the adopted rule are identical, then only the section number and its caption are reproduced, followed by the words, "No change." An explanation of each change, except editorial changes, is provided in *italics*. ADEQ did not think it was necessary to explain every editorial change made to the rules.

**R18-4-101. Definitions**

~~The terms of this Chapter have the following meanings~~ In this Chapter, the following terms mean:

1-3. *No change*

4. "Backflow" means a reverse flow condition, ~~which that~~ causes water or mixtures of water and other liquids, gases, or substances to flow back into the distribution system. Backflow can be created by a difference in water pressure (backpressure), a vacuum or partial vacuum (backsiphonage), or a combination of both.

5. "Backflow-prevention assembly" means ~~any assembly~~ a mechanical device used to prevent backflow.

*ADEQ replaced "assembly" with "a mechanical device" to clarify the definition and make it less circular.*

6-8 *No change*

9. "Coagulation" means a treatment process ~~which that~~ uses coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

10. "Community water system" means a public water system ~~which that~~ serves 15 or more service connections used by year-round residents or ~~which that~~ serves 25 or more year-round residents.

11. "Compliance cycle" means a ~~nine~~ 9-calendar year time frame during which a public water system is required to monitor. Each compliance cycle consists of ~~three~~ 3 compliance periods. The first compliance cycle began January 1, 1993, and ends December 31, 2001. The second compliance cycle begins January 1, 2002 and ends December 31, 2010. The third compliance cycle begins January 1, 2011 and ends December 31, 2019.

*ADEQ had originally proposed to delete the language that is underlined above in the definition of "compliance cycle." ADEQ received a public comment which recommended that additional language be added to this definition to clarify when compliance cycles begin and end. ADEQ reinstated the underlined language because it specifically describes when the first three compliance cycles begin and end. ADEQ also replaced number words with Arabic numerals to conform to the rule drafting style guidelines of the Office of the Secretary of State.*

12. "Compliance period" means a ~~three~~ 3-calendar-year time frame within a compliance cycle.  
Within the first compliance cycle, the first compliance period began January 1, 1993, and ended December 31, 1995. The second compliance period began January 1, 1996, and ends December 31, 1998. The third compliance period begins January 1, 1999, and ends December 31, 2001.  
*ADEQ had originally proposed to delete the language that is underlined above in the definition of "compliance period." ADEQ received a public comment which recommended that additional language be added to the definition to clarify when compliance periods begin and end. In response to this comment, ADEQ replaced the language in the adopted rule because it specifically describes when the first three compliance periods begin and end. ADEQ also replaced the number word, "three" with an Arabic numeral.*
13. "Consecutive public water system" means a public water system ~~which~~ that obtains all of its water from another public water system that is regulated by the Department.
14. "Contaminant" means any physical, chemical, biological, ~~microbiological~~, or radiological substance in water.  
*ADEQ revised this definition to conform the definition of the term to the way it is defined in the National Primary Drinking Water Regulations [See 40 CFR §141.2]. Also, the word, "microbiological" is redundant because the definition already includes "biological" substances.*
15. *No change*
16. "Corrosion inhibitor" means a substance that ~~is capable of reducing the corrosivity of water toward~~ reduces corrosion of metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.  
*ADEQ revised this definition to make it active voice instead of passive voice.*
17. "Cross-connection" means a physical connection between a public water system and any source of water or other substance ~~which~~ that may lead to contamination of the water provided by the public water system through backflow.
18. *No change*
- ~~19. "Department" means the Arizona Department of Environmental Quality.~~

ADEQ deleted this definition because "Department" is defined by A.R.S. §49-201(9).

~~20~~ 19. "Detected" means measured in ~~the a~~ laboratory at a concentration ~~which that~~ is at or above the method detection limit ~~for a given contaminant~~.

~~21~~ 20. "Diatomaceous earth filtration" means a treatment process that results in substantial particulate removal in which a precoat cake of diatomaceous earth filter media is deposited on a support membrane ~~known as a septum (septum)~~ and, while the water is filtered through the cake on the septum, additional filter media ~~known as body feed (body feed) are is~~ continuously added to the feed water to maintain the permeability of the filter cake.

~~22~~ 21. "Direct filtration" means a series of treatment processes including coagulation and filtration but excluding sedimentation that result in substantial particulate removal.

~~23~~ 22. "Disinfectant" means ~~any an~~ oxidant, including ~~but not limited to~~ chlorine, chlorine dioxide, chloramines, ozone, or ~~any an~~ equivalent agent or process such as ultraviolet light, ~~added to water in any part of the treatment or distribution process that is intended to kill or inactivate kills or inactivates~~ pathogenic organisms.

ADEQ revised this definition to make it more consistent with the federal definition of "disinfectant" in the National Primary Drinking Water Regulations at 40 CFR §141.2. ADEQ eliminated the phrase, "but not limited to," because it is unnecessary jargon.

~~24~~ 23. "Disinfection" means a treatment process that ~~is intended to kill or inactivate kills or inactivates~~ pathogenic organisms in water by oxidants, ultraviolet light, or equivalent agents.

~~25~~ 24. "Distribution system"

*No change except to renumber.*

~~26~~ 25. "Domestic or other non-distribution system plumbing problem"

*No change except to renumber.*

~~27~~ 26. "Dose equivalent"

*No change except to renumber.*

~~28~~ 27. "Double check valve assembly" means a backflow prevention assembly ~~that contains at least composed of~~ two independently acting check valves with tightly closing, ~~resilient seated~~ shut-off

valves on each end of the assembly and properly located, resilient seated test cocks.

*ADEQ revised this definition to be more consistent with the definition of "double check valve backflow prevention assembly" at §4.19 of the Manual of Cross-Connection Control published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.*

~~29~~ 28. "Effective corrosion inhibitor residual" means a concentration of a corrosion inhibitor that is sufficient to form a passivating protective film on the interior walls of a pipe.

*ADEQ eliminated the confusing word, "passivating."*

~~30~~ 29. "Exclusion" means a waiver granted by the Department under R18-4-112 from a requirement ~~established by of~~ this Chapter that is not a requirement contained in the National Primary Drinking Water Regulations ~~which may be granted pursuant to R18-4-112~~.

~~31~~ 30. "Exemption" means ~~the allowance of a temporary deviation from a maximum contaminant level or a treatment technique requirement established by this Chapter which may be granted pursuant to R18-4-111~~ a temporary deviation from a maximum contaminant level or treatment technique required by this Chapter that is granted by the Department under R18-4-111 .

*ADEQ revised this definition to use parallel language to that used in the definition of "exclusion."*

~~32~~ 31. "Filtration"

*No change except to renumber.*

~~33~~ 32. "First-draw sample" means a ~~one~~ 1-liter sample of tap water collected in accordance with R18-4-310(D) ~~that has been standing in plumbing pipes for at least six hours and is collected without flushing the tap.~~

*ADEQ changed number words and eliminated unnecessary language in the definition.*

*R18-4-310(D) describes how first draw samples are be collected.*

~~34~~ 40 *No change except to renumber to 33-39*

~~41~~ 40. "Groundwater under the direct influence of surface water" means any water beneath the surface of the ground with:

- a. A significant occurrence of insects or other macroorganisms, algae, large diameter pathogens such as *Giardia lamblia*, or total coliform; or
- b. Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH ~~which that~~ closely correlate to climatological or surface water conditions.

~~42~~ 41. "Halogenated"

*No change except to renumber.*

~~43~~ 42. "HPC"

*No change except to renumber*

~~44~~ 43. "Initial compliance period" means the first, full ~~three-year~~ 3-year compliance period in a compliance cycle ~~during which that~~ a public water system conducts initial monitoring.

~~45~~ 44. "Initial monitoring year" means the calendar year designated by the Department within a compliance period in which a public water system conducts initial monitoring at a point of entry. ADEQ

*added the underlined language referring to the point-of-entry in response to a public comment.*

*The commenter pointed out that the definition of "initial monitoring year" needs to refer to the point-of-entry because a public water system may develop a new source with a new point-of-entry to the distribution system after initial monitoring has been completed at existing points-of-entry. ADEQ agrees that the concept of the initial monitoring year needs to be tied to the point-of-entry. When a new source is developed by a public water system, ADEQ will designate an initial monitoring year for the new point-of-entry. The initial monitoring year for a new point-of-entry will differ from the initial monitoring years that have already been designated by ADEQ for existing points-of-entry. ADEQ's policy is to designate the initial monitoring year for a new point-of-entry so that initial monitoring is conducted in the same year within a compliance period that routine monitoring is conducted at the other points-of-entry in the system. The addition of a reference to the point-of-entry in the definition of the term helps to clarify that the "initial monitoring year" is designated on a point-of-entry basis.*

~~46~~ 45. "Large water system"

*No change except to renumber*

- ~~47~~ 46. "Lead-free" means that the pipe, solder, or flux used in the installation or repair of any public water system or in ~~any residential or nonresidential a user~~ facility ~~which that~~ provides water for human consumption and ~~which that~~ is connected to such public water system, meets the following criteria:
- a. All solders and flux contain not more than 0.2% lead,
  - b. All pipes and pipe fittings contain not more than 8.0% lead.
- ~~48~~ 49. "Lead service line" means a service line made of lead ~~which that~~ connects a water main to a building inlet and any lead pigtail, gooseneck, or fitting ~~which that~~ is connected to the service line.
- ~~49~~ 48. "Log" means, ~~in terms of the percentage~~ removal or inactivation of *Giardia lamblia* cysts or viruses, ~~the following as follows~~:
- a. "One-log" is 90%.
  - b. "Two-log" is 99%.
  - c. "Three-log" is 99.9%.
  - d. "Four-log" is 99.99%.
- ~~50~~ 49. "Man-made beta particle and photon emitters" means all radionuclides emitting beta particles or photons, except the daughter products of Thorium-232, Uranium-235, and Uranium-238, listed in Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and Water for Occupational Exposure," Handbook 69, U.S. Department of Commerce, National Bureau of Standards, amended as of August 1963 (and no future editions),

which is incorporated by reference and on file with the Office of the Secretary of State and the Department. [Copies of Handbook 69 are also available from the Library of Congress by telephoning \(202\) 707-5640.](#)

*ADEQ added the last sentence to the definition because it was required by the Governor's Regulatory Review Council as a condition of approval of the rule package.*

~~51~~ 50 "Maximum contaminant level" means the maximum permissible level for a contaminant in [drinking](#) water ~~which that~~ is delivered to any person who is served by a public water system.

~~52~~ 51 "Maximum total trihalomethane potential"  
*No change except to renumber.*

~~53 - 57.~~ *No change except to renumber to 52-56.*

~~58~~ 57 "Nephelometric turbidity unit" means the unit of measure for turbidity. Turbidity is a measure of light scatter or absorption by suspended or colloidal matter [in water](#). Turbidity is measured as an indicator of ~~treatment effectiveness, specifically for clarification and filtration processes~~ [the effectiveness of filtration treatment](#).

~~59~~ 58. "Noncommunity water system" means a public water system that ~~is not a community water system.~~ ~~A noncommunity water system~~ is either a nontransient, noncommunity water system or a transient, noncommunity water system.

~~60~~ 59. "Nontransient, noncommunity water system" means a public water system ~~which that~~:

- a. Serves 15 or more service connections that are used by the same persons for at least 6 months per year, or
- b. Serves the same 25 or more persons for at least 6 months per year.

~~61-67.~~ *No change except to renumber to 60 - 66.*

~~68~~ 67 "Point-of-entry treatment device" means a device ~~which that~~ applies treatment to [drinking](#) water entering a ~~user's premises~~ [house or building](#) for the purpose of reducing contaminants in the [drinking](#) water that is distributed ~~through the premises~~ [throughout the house or building](#).

*ADEQ revised this definition to make it more consistent with the federal definition of "point-of-*

*entry treatment device" that is prescribed at 40 CFR §141.2.*

- ~~69~~ 68. "Point-of-use treatment device" means a device ~~which that~~ applies treatment to the drinking water flowing to a single tap ~~for the purpose of reducing to reduce~~ contaminants in drinking water at that ~~one~~ single tap.

*ADEQ revised this definition to make it more consistent with the federal definition of "point-of-use treatment device" that is prescribed at 40 CFR §141.2.*

- ~~70~~ 69. "Pressure vacuum breaker assembly" means a ~~backflow~~ backsiphonage prevention assembly that contains ~~one or two~~ an independently operated, internally loaded check ~~valves~~ valve; an internally operated air-inlet valve located on the discharge side of the check valve; ~~with~~ tightly closing resilient seated shut-off valves on each end of the check valve assembly; and properly located resilient seated test cocks.

*ADEQ revised this definition to make it more consistent with the definition of "pressure vacuum breaker backsiphonage prevention assembly" at §4.35 of the Manual of Cross-Connection Control that is published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.*

- ~~71~~ 70. "Private agricultural water system" ~~means a water system which:~~
- ~~a. — Is owned and operated as part of an agricultural enterprise;~~
  - ~~b. — Has less than 15 service connections or serves less than 25 persons on the real property of the agricultural enterprise;~~
  - ~~c. — Serves only the owner, employees, and their dependents residing on the real property of the agricultural enterprise;~~
  - ~~d. — Does not sell water for domestic purposes; and~~
  - ~~e. — Does not hold out, offer, or provide water to the public at large.~~
- has the same meaning as prescribed in A.R.S. §49-352(I)(1).

*ADEQ revised this definition because it is unnecessary to repeat in rule the definition of a term that has been defined by statute.*

~~72~~ 71 "PTA"

*No change except to renumber.*

~~73~~ 72. "Public water system" means a system for the distribution of water to the public for human consumption ~~which that~~ serves 15 or more service connections or ~~which serves~~ an average of at least 25 persons per day for at least 60 days a year. A public water system includes:

- a. Any collection, treatment, storage, and distribution ~~facilities~~ facility under the control of the water supplier and used in connection with the system; and
- b. Any collection or pretreatment storage ~~facilities~~ facility not under the control of the water supplier ~~which are~~ that is used with the system.

A public water system is either a community water system; a nontransient, noncommunity water system; or a transient, noncommunity water system.

~~74~~ 73 "Reduced pressure principle backflow-prevention assembly" means a backflow-prevention assembly ~~which that contains~~ includes not less than two 2 independently acting check valves; ~~an automatically operated, differential a hydraulically operating, mechanically independent pressure differential~~ relief valve located between the ~~two 2~~ two 2 check valves; ~~with~~ tightly closing resilient seated shut-off valves on each end of the check valve assembly; and properly located resilient seated test cocks.

*ADEQ revised the definition to make it more consistent with the definition of "reduced pressure principle backflow prevention assembly" that is prescribed in §4.38 of the Manual of Cross-Connection Control published by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.*

~~75-76~~ *No change except to renumber to 74 - 75.*

~~78~~ 77. "Sanitary survey" means an on-site review of the water source, facilities, equipment, operation and maintenance of a public water system ~~for the purpose of evaluating the adequacy of such source; facilities, equipment, operation, and maintenance for producing and distributing~~ to evaluate their adequacy to produce and distribute safe drinking water.

~~79~~ 78 "Sedimentation" means a treatment process ~~which that~~ holds water in a low-flow condition before filtration ~~and which removes~~ to remove solids by gravity or separation.

~~80~~ 79. "Semipublic water system" means a ~~water~~ system for the distribution of water to the public for human consumption with at least 4 service connections ~~and but~~ less than 15 service connections ~~which that~~:

- a. Serves an average of less than 25 persons per day, or
- b. Serves an average of 25 or more persons a day but for less than 60 days a year.

*ADEQ revised the definition of "semipublic water system" to use parallel language to that which is used in the definition of "public water system." Also, ADEQ repealed the definition of "water system" that is found at R18-4-101 in the current rules. ADEQ amended the definition of "semipublic water system" to conform it because the definition uses the repealed term, "water system."*

~~81~~ 80. "Service connection"

*No change except to renumber.*

~~82~~ 81 "Service line" means the water line ~~which that~~ runs from the corporation stop at a water main to the building inlet, including any pigtail, gooseneck, or fitting.

~~83~~ 82. "Service line sample" means a ~~one-liter sample of water; first draw sample~~ collected from a service line in accordance with R18-4-310(D); ~~that has been standing for at least 6 hours in a service line.~~

~~84~~ 83. "Single-family structure" means a building constructed as a single-family residence that is ~~currently~~ used as a residence or place of business.

~~85 - 87~~. *No change except to renumber to 84 - 86.*

~~88~~ 87. "Source" means ~~any a~~ body of water, above or below the ground, ~~from which a water supply is~~

~~obtained that supplies water to a public water system~~, including ~~any a~~ well, spring, or surface water.

~~89~~ 88 "Standard sample"

*No change except to renumber.*

~~90~~ 89. "Surface water" means ~~any a~~ source that is exposed to the unenclosed atmosphere and ~~that is~~ subject to surface runoff.

~~91~~. *No change except to renumber to 90.*

91. "TNCWS" means a transient, noncommunity water system.

*ADEQ added a definition of "TNCWS" because the abbreviation is used extensively in Chapter 4.*

92. No change

93. "Transient, noncommunity water system" means a public water system ~~which that~~:

- a. Serves 15 or more service connections but ~~which~~ does not serve 15 service connections used by the same persons for more than 6 months per year, or
- b. Serves an average of at least 25 persons per day for at least 60 days per year but ~~which~~ does not serve the same 25 person for more than 6 months per year.

94. "Treatment" means ~~to intentionally change a process that changes~~ the quality of water by ~~a~~ physical, chemical, or biological ~~process means~~.

95. "Treatment technique" means a treatment process that has been promulgated by EPA in lieu of a maximum contaminant level. Treatment techniques include the requirements prescribed in Article 3 of this Chapter.

*ADEQ added a definition of "treatment technique" to distinguish the treatment technique requirements that are prescribed in Article 3 from best available technology requirements that are prescribed in R18-4-220. The term, "treatment technique," is a term of art under the Safe Drinking Water Act [SDWA]. Under §1401(1)(C)(i) of the SDWA, EPA may promulgate a MCL for a contaminant if it is economically or technologically feasible to ascertain the level of the contaminant in drinking water. In the alternative, under §1401(1)(C)(ii) of the SDWA, EPA may*

*promulgate a "treatment technique" which leads to a reduction of a contaminant if EPA finds that it is not economically or technologically feasible to ascertain the level of that contaminant in drinking water. EPA has promulgated several treatment techniques under the authority of §1401(1)(C)(ii). These include the surface water treatment rule [i.e., filtration and disinfection requirements], the rules related to the control of lead and copper, and requirements related to the use of acrylamide and epichlorohydrin. ADEQ has placed these treatment technique requirements in Article 3 of the state drinking water rules. Adding a definition of the term, "treatment technique," clarifies that the term refers to the requirements that are prescribed in Article 3 and not to best available technology requirements generally.*

~~95~~ 96. "Trihalomethane" means one of the family of organic compounds, named as derivatives of methane, wherein ~~three of four~~ 3 of 4 hydrogen atoms in methane are substituted by a halogen atom in the molecular structure.

~~96~~ 97. "TTHM" *No change except to renumber to 97.*

~~97~~ 98. "User facilities" means all facilities ~~[for example, buildings, appurtenances, equipment, manufacturing and storage facilities, and water distribution pipes]~~ on the ~~user's~~ customer's side of the service connection.

*ADEQ amended this definition to eliminate the unnecessary examples to make it more concise.*

~~98.~~ ~~"Variance" means the allowance of a deviation from either a maximum contaminant level or a treatment technique which may be granted pursuant to R18-4-110.~~

*ADEQ repealed this definition because it is unnecessary. The requirements for variances are prescribed in R18-4-110.*

99 - 100 *No change.*

101. "Water main" means ~~any pipe which~~ a pipe that is used to distribute potable drinking water, ~~which~~ that serves more than one property ~~or residence~~, and is exterior to buildings.

102. *No change.*

103. "Waterborne disease outbreak" means the occurrence of acute infectious illness ~~which~~ that is epidemiologically associated with the ingestion of drinking water from a public water system.

104. "Water system" means:

- a. ~~Any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used in connection with such system; and~~
- b. ~~Any collection or pretreatment storage facilities not under such control which are used with such system for the distribution of water to the public for human consumption or for any of the following purposes: producing, processing, storing, handling, serving, or transporting food or drink and the washing of related utensils, equipment or food contact~~

surfaces;

bathing

or

personal

hygiene;

or

washing

clothes.

A water

system

does not

include a

system

which

delivers

water

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purposes

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*ADEQ repealed the definition of “water system” because 1) the phrase, “water system,” is not used in the text of the drinking water rules. The rules use the phrase, “public water system,” 2) the definition of “water system” is broader than the definition of “public water system” because it includes systems which distribute water for purposes other than for human consumption, 3) the use of the term is not consistent with the definition of “public water system” in the National Primary Drinking Water Regulations, and 4) the inclusion of the term confuses the scope of the drinking water rules.*

~~105~~ 104 "Water treatment plant" No change except to renumber.

#### **R18-4-102. Applicability**

- A. No change.
- B. The rules in this Chapter do not apply to semipublic water systems or to private agricultural water systems, unless ~~a health hazard is identified~~ the Department identifies a health hazard. The Director may take enforcement action to require that a semipublic water system or a private agricultural water system comply with a rule prescribed in this Chapter to safeguard the health of users of the system. The Director shall identify, in writing, the health hazard that provides grounds for initiation of any enforcement action.

*ADEQ proposed to repeal the underlined sentence above which requires ADEQ to identify, in writing, the health hazard which provides grounds for initiation of an enforcement action against a semipublic water system or a private agricultural water system. ADEQ received several public comments opposing the proposed repeal of this language. While ADEQ continues to believe that the highlighted sentence is unnecessary because ADEQ already includes a written statement of the jurisdictional grounds for taking an enforcement action within the text of any administrative compliance order, ADEQ decided to reinstate the sentence in the rule. The reinstated language provides specific guidance to ADEQ compliance officers regarding when ADEQ can enforce Chapter 4 requirements against a semipublic water system or a private agricultural water system. The reinstatement of the language also addresses the concern*

*expressed by members of the regulated community that the repeal of the language may remove an important procedural safeguard which protects against unreasonable enforcement actions by ADEQ [See response to the public comment on R18-4-102].*

C. The rules in this Chapter do not apply to a public water system that meets all of the following criteria:

1. The public water system consists only of distribution and storage facilities and does not have any collection or treatment facilities,
2. The public water system obtains all of its water from, but is not owned or operated by, another public water system that is regulated under this Chapter,
3. The public water system does not sell \* water to any person, and
4. The public water system is not a carrier ~~which that~~ conveys passengers in interstate commerce.

D. The rules in this Chapter do not apply to a public water system for a mobile home park ~~which that~~ meets all of the following criteria:

1. The public water system for the mobile home park consists only of distribution and storage facilities and does not have ~~any~~ collection or treatment facilities,
2. The public water system for the mobile home park obtains all of its water from, but is not owned or operated by, another public water system that is regulated under this Chapter, and
3. The public water system for the mobile home park does not sell water to any person. For purposes of this subsection, submetering by a mobile home park to determine the quantity of water used by individual park tenants shall not be considered to be selling water provided the submetering is for purposes of water conservation.

**R18-4-103. Recordkeeping Requirements**

A. A water supplier shall retain on the premises of a public water system or at a convenient location near its premises, the following records for the following minimum periods of time:

1. Records of bacteriological analyses, including records of analyses for total coliform, fecal coliform, *Escherichia coli* (*E. coli*), and heterotrophic bacteria, ~~which shall be kept for at least for~~ 5 years.
2. Records of chemical analyses, ~~which shall be kept for at least for~~ 10 years.
3. Records of actions taken by the water supplier to correct violations of this Chapter, ~~which shall be kept for at least for~~ 3 years after the last action taken to correct the violation.
4. Records concerning a variance or exemption granted to the public water system, ~~which shall be kept for at least for~~ 5 years after the expiration of the variance or exemption.
5. Copies of written reports, summaries, or communications relating to a sanitary survey of the public water system, ~~which shall be kept for at least for~~ 10 years after completion of the sanitary survey.
6. ~~Any public water system that is subject to the requirements of the lead and copper rules prescribed at R18-4-305 through R18-4-316 shall retain original records~~ Records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, Department determinations, and any other information required by R18-4-305 through R18-4-316, ~~Each public water system shall retain the records for at least 12 years~~ for 12 years.
7. A water supplier of a surface water system shall retain the following records for ~~at least~~ 10 years:
  - a. Records of turbidity measurements, including the number and percentage of filtered water turbidity measurements taken during the month ~~which that~~ are less than or equal to the turbidity limits specified in R18-4-302 for the filtration technology ~~being~~ used.
  - b. The date and value of any turbidity measurement taken during ~~the a month which that~~ exceeds 5 NTUs.
8. ~~A water supplier of a surface water system shall retain the following records for at least 10 years:~~
  - ~~a c.~~ a c. Records of the lowest residual disinfectant concentration (in mg/L) in water entering the distribution system for each day that each water treatment plant ~~is operating~~ operates.
  - ~~b d.~~ b d. Records of the residual disinfectant concentration (in mg/L) in water for each sampling site in the distribution system.
  - ~~c e.~~ c e. Records of analyses for heterotrophic bacteria if HPC is measured ~~in lieu~~ instead of

residual disinfectant concentration in the distribution system.

- B. ~~When records of laboratory analyses are required to be maintained, a~~ A water supplier shall keep the ~~actual original~~ laboratory reports of drinking water analyses or copies of Department-approved reporting forms.

*ADEQ made editorial changes to this Section in response to staff comments from the Governor's Regulatory Review Council. ADEQ also consolidated subsections (A)(7) and (A)(8) to make the rule more concise.*

**R18-4-104. Reporting Requirements**

- A. Routine monitoring: ~~to determine compliance with MCLs~~: Except as specified in this subsection, a water supplier shall report the ~~results~~ result of any test measurement or analysis required by Article 2 ~~of this Chapter~~ to the Department within the first 10 days following the month ~~in which the result is received that the water supplier receives the analytical result~~ or the first 10 days following the end of ~~a required an applicable~~ monitoring period prescribed by ~~the Department Article 2~~, whichever is less.
1. ~~Fecal coliform / E. coli: If any routine or repeat sample for total coliform is positive, the water supplier shall have the total coliform-positive sample analyzed to determine if fecal coliforms are present, except that the water supplier may test for E. coli instead of fecal coliforms.~~ If fecal coliforms or *E. coli* are present in a total coliform-positive sample, a water supplier shall report the positive results to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receiving notice of the fecal coliform-positive or *E. coli*-positive test result.
  2. ~~If nitrate is present in a sample in a concentration which exceeds 10 mg/L, then a water supplier shall report the exceedance to the Department within 24 hours of receipt of analytical results which indicate the exceedance.~~ Nitrate: If monitoring results indicate an exceedance of the MCL for nitrate in a routine sample, a water supplier is required by R18-4-208(I) to take a confirmation sample within 24 hours of receipt of the analytical results. A water supplier shall report the MCL exceedance to the Department, by telephone or facsimile, within 24 hours of receipt of the analytical results.
  3. Total trihalomethanes: A water supplier shall report the arithmetic average of analytical results for

total trihalomethanes within 30 days of receipt of the last analytical results of the previous quarter.

- B. MCL violations: Except as specified in this subsection, a water supplier shall report a violation of ~~any a~~ maximum contaminant level MCL to the Department within 48 hours of receipt of analytical results ~~which~~ that indicate a violation.
1. A water supplier shall report a violation of a ~~maximum contaminant level MCL~~ for total coliform to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of analytical results ~~which~~ that indicate a violation.
  2. A water supplier shall report a violation of a ~~maximum contaminant level MCL~~ for nitrate or nitrite to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of analytical results for the confirmation sample ~~which~~ that confirms a violation.
  3. A water supplier shall report a violation of an interim ~~maximum contaminant level MCL~~ for turbidity to the Department, by telephone or facsimile, ~~as follows:~~
    - a. ~~If~~ Within the first 10 days following the end of the month if the arithmetic average of the analytical results of daily samples taken during the month exceeds 1 NTU, ~~then the water supplier shall report the violation to the Department within the first 10 days following the end of the month.~~
    - b. ~~If~~ Within 48 hours of receipt of analytical results for the second daily sample if the arithmetic average of the results of daily samples taken on 2 consecutive days exceeds 5 NTUs, ~~then the water supplier shall report the violations to the Department within 48 hours of receipt of the analytical results.~~
- C. Filtration ~~reporting requirements~~: Except as provided in subsection (C)(4), a water supplier of a surface water system ~~which~~ that provides provides filtration shall report the following turbidity measurements to the Department within 10 days after the end of the month for each water treatment plant that ~~is operating~~ operates during the month:
1. The total number of filtered water turbidity measurements taken during the month,
  2. The number and percentage of filtered water turbidity measurements ~~which~~ that are less than or equal to the turbidity limits prescribed in R18-4-302 for the filtration technology ~~being~~ used,

3. The date and value of any filtered water turbidity measurement taken during the month that exceeds 5 NTUs,
  4. If the turbidity of the filtered water exceeds 5 NTUs, ~~then~~ the water supplier shall report the exceedance to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after the exceedance.
- D. ~~Disinfection reporting requirements~~: Except as provided in subsection (D)(4), a water supplier of a surface water system ~~which that~~ provides disinfection shall report the following information to the Department within 10 days after the end of each month for each water treatment plant that ~~is operating~~ operates during the month:
1. For each day, the lowest measurement of residual disinfectant concentration in mg/L in water entering the distribution system;
  2. The date and duration of each time period ~~during which~~ the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/L; and ~~the date and time that the Department was notified of the occurrence~~.
  3. The value of "V" calculated by the formula prescribed in R18-4-303(C)(2) for the current and previous month ~~the surface water system serves water to the public~~.
  4. If, ~~at any time~~, the residual disinfectant concentration falls below 0.2 mg/L in water entering the distribution system, the water supplier shall report the occurrence to the Department as soon as possible, but no later than 24 hours after the occurrence. The water supplier ~~also~~ shall report whether the residual disinfectant concentration was restored to at least 0.2 mg/L within 4 hours.
- E. ~~Reporting requirements for tap~~ Tap water monitoring for lead and copper ~~under R18-4-310~~: Each ~~large, medium, or small public~~ water system ~~which is required to conduct tap water monitoring that monitors~~ for lead and copper pursuant to R18-4-310 shall report to the Department the information specified below ~~for all tap water samples~~ within the first 10 days following the end of each monitoring period:
1. The results of all tap water samples, ~~for lead and copper including~~ the location of each sample site, and the criteria ~~under which the site was selected~~ used to select the site for the system's sampling pool.

2. A certification by the water supplier that each first-draw sample ~~collected by the water system~~ is ~~one~~ 1-liter in volume and, to the best of ~~their~~ the water supplier's knowledge, ~~has~~ stood motionless in the service line or in the interior plumbing of a sampling site for at least 6 hours. If a resident collected a tap water sample, the water supplier shall certify that each sample was collected after the water supplier informed the resident of the proper sampling procedures.
- ~~3. Where residents collected samples, a certification that each tap sample collected by the residents was taken after the water system informed them of the proper sampling procedures.~~
- 4.3 The 90th percentile lead and copper concentrations ~~measured from among~~ for all lead and copper

tap water samples collected during each monitoring period as calculated in accordance with R18-4-308.

~~5.4 With the exception of initial tap water monitoring for lead and copper, the system shall identify any site which was not sampled during previous monitoring periods, and include an explanation of why sampling sites have changed. A list of sampling sites that were not sampled in the previous monitoring period and an explanation for the change in sampling sites.~~

~~6. By the applicable date for commencement of tap water monitoring, each CWS which does not complete its sampling pool with Tier 1 sampling sites meeting the targeting criteria specified in R18-4-309(A)(1) shall submit a justification of its selection of Tier 2 or Tier 3 sampling sites to the Department. The justification shall be made on a form that is approved by the Department.~~

~~7. By the applicable date for commencement of tap water monitoring, each NTNCWS which does not complete its sampling pool with Tier 1 sampling sites meeting the targeting criteria specified in R18-4-309(A)(2) shall submit a justification of its selection of Tier 2 sampling sites to the Department. The justification shall be made on a form that is approved by the Department.~~

~~8. By the applicable date for commencement of tap water monitoring, each water system with lead service lines that is not able to locate the number of sites served by such lines required under R18-4-309(A)(4) shall submit a justification to the Department which explains why it was unable to locate a sufficient number of sites served by lead service lines. The justification shall be made on a form that is approved by the Department.~~

~~9.5. A large, medium, or small water system which collects sampling data in addition to the minimum required by R18-4-309 shall report the analytical results from any additional samples to the Department within 10 days following the end of the monitoring period during which the samples are collected. Tap water monitoring data that is collected in addition to the minimum required by R18-4-310.~~

F. Sampling pools for tap water monitoring: A public water system that conducts tap water monitoring for lead and copper is required to identify a pool of sampling sites pursuant to R18-4-309. A water supplier shall submit the following information on a Department form by the date of commencement of tap water

monitoring:

1. Each CWS that does not complete its sampling pool with Tier 1 sampling sites meeting the criteria specified in R18-4-309(A)(1) shall submit a justification of its selection of Tier 2 or Tier 3 sampling sites.
2. Each NTNCWS that does not complete its sampling pool with Tier 1 sampling sites meeting the criteria specified in R18-4-309(A)(2) shall submit a justification of its selection of Tier 2 sampling sites to the Department.
3. Each CWS or NTNCWS with lead service lines that is not able to locate the number of sites served by such lines required under R18-4-309(A)(4) shall submit a justification to the Department which explains why it was unable to locate a sufficient number of sites served by lead service lines.

F.G. Reporting requirements for water quality parameter monitoring under R18-4-311 Water quality parameter monitoring: Each ~~large, medium, or small~~ public water system ~~which is required to conduct monitoring that monitors~~ for water quality parameters pursuant to R18-4-311 shall report the following information to the Department within the first 10 days ~~following~~ after the end of a monitoring period:

1. The results of all tap water samples for pH, alkalinity, calcium, conductivity, ~~and~~ water temperature, and where applicable, orthophosphate or silica collected pursuant to R18-4-311(B).
2. The results of all source water ~~quality parameter~~ samples for pH, alkalinity, calcium, conductivity, and where applicable, orthophosphate or silica, collected at sampling points ~~as~~ prescribed by R18-4-218.
3. ~~A large, medium, or small system which collects sampling data on water quality parameters in addition to the minimum required by R18-4-311 shall report the analytical results from any additional water quality parameter samples to the Department within 10 days following the end of the monitoring period during which the samples were collected. The results of any water quality parameter samples collected in addition to the minimum required by R18-4-311.~~

G.H. Reporting requirements for source water monitoring for lead and copper under R18-4-314 Source water monitoring for lead and copper: Each ~~large, medium, or small~~ public water system ~~which is required to conduct source water monitoring that monitors source water~~ for lead and copper pursuant to R18-4-314

shall report the following information to the Department within the first 10 days after the end of the monitoring period:

1. ~~A water system shall report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period. The results for all source water samples.~~
2. ~~With the exception of the first round of source water monitoring, a water system shall identify any site which was not sampled in previous monitoring periods and include an explanation of why the sampling site was changed. A list of any sampling sites that were not sampled in the previous monitoring period and an explanation for the change in sampling sites, and~~
3. ~~For systems which exceed an action level for lead or copper, the system's recommendation regarding source water treatment; and~~
4. ~~For systems required to install source water treatment, a letter certifying that the system has completed installing the treatment designated or approved by the Department within 24 months after the Department designates or approves the treatment.~~
- 5.3. ~~A large, medium, or small water system which collects source water samples for lead and copper in addition to the minimum required by R18-4-314 shall report the analytical results from any additional source water samples to the Department within 10 days following the end of the monitoring period during which the samples are collected. The results of any source water samples collected in addition to the minimum required by R18-4-314.~~

I. Source water treatment: A water supplier shall report the following information to the Department within the following minimum time periods:

1. Within 6 months after a public water system exceeds an action level for lead or copper, the water supplier shall submit a letter to the Department that makes a recommendation regarding installation and operation of source water treatment. If the water supplier demonstrates that source water treatment is not necessary to minimize lead or copper levels at taps, the water supplier may recommend that no source water treatment be installed.
2. If the Department determines that source water treatment is necessary under R18-4-314(E), the

water supplier shall submit a letter that certifies that the public water system has installed the source water treatment designated or approved by the Department within 24 months after receipt of a written determination by the Department that source water treatment is necessary.

H.J. Reporting requirements for lead service line replacement under R18-4-315 Lead service line replacement: A public water system ~~which that~~ is required to replace lead service lines pursuant to R18-4-315 shall report the following information to the Department:

1. ~~Within 12 months after a system exceeds an action level for lead after installation of corrosion control treatment, the system shall demonstrate in writing to the Department that it has conducted a materials evaluation to identify the initial number of lead service lines in its distribution system, and shall provide the Department with the system's schedule for replacing annually at least 7% of the initial number of lead service lines in its distribution system. If a public water system exceeds the action level for lead after installation of corrosion control or source water treatment, the water supplier shall, within 12 months after the system exceeds the action level for lead, submit the following information to the Department:~~
  - a. A report that identifies the initial number of lead service lines in the distribution system and a schedule for the annual replacement of at least 7% of the initial number of lead service lines in the distribution system.
  - b. A letter that demonstrates that the public water system has either:
    - i. Replaced at least 7% of the initial number of lead service lines or a greater percentage of lead service lines specified by the Department under R18-4-315(F) in the previous 12 months, or
    - ii. Conducted sampling that demonstrates that the lead concentration in all lead service line samples from an individual service line are # 0.015 mg/L. If a public water system conducted lead monitoring of individual lead service lines, the letter shall document the number of lead service lines with lead concentrations that are # 0.015 mg/L and the number of lead service lines that were replaced. The total number of lead service lines with lead concentrations that are # 0.015 plus the

number of lead service lines replaced shall equal at least 7% of the initial number of lead service lines or the larger percentage specified by the Department under R18-4-315(F).

~~2. Within 12 months after a system exceeds the action level for lead after installation of corrosion control treatment or source water treatment, and every 12 months thereafter, the system shall demonstrate in writing that the system has either:~~

~~a. Replaced in the previous 12 months at least 7% of the initial lead service lines [or a greater of lead service lines specified by the Department under R18-4-315(F)], or~~

~~b. Conducted sampling which demonstrates that the lead concentration in each lead service line sample is less than or equal to 0.015 mg/L. In such cases, the total number of lines replaced shall equal at least 7% of the initial number of lead lines in place at the time the lead service line replacement program begins [or the percentage specified by the Department under R18-4-315(F)].~~

2. The water supplier shall submit an annual letter to the Department which contains the following information:

a. The number of lead service lines scheduled to be replaced during the previous year of the system's lead service line replacement program.

b. The number and location of each lead service line replaced during the previous year of the system's lead service line replacement program.

c. If measured, the lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling.

~~† K. Reporting requirements under Article 4 Special monitoring: A water supplier who is required to conduct that conducts special monitoring as prescribed in Article 4 of this Chapter shall report the following information to the Department:~~

~~1. A water supplier who is required to conduct special monitoring that monitors for sulfate pursuant to R18-4-401 shall report the sulfate monitoring results to the Department within 30 days of receipt of the analytical results.~~

2. A water supplier ~~who is required to conduct special monitoring that monitors~~ for sodium pursuant to R18-4-402 shall report the sodium monitoring results ~~to the Department within~~ in the first 10 days of the month ~~following after~~ the month ~~in which that~~ the analytical results ~~are were~~ received. A water supplier shall notify the Arizona Department of Health Services [ADHS] and the local county health department of the sodium ~~levels~~ monitoring results by direct mail within 3 months of receipt of the analytical results ~~of sodium monitoring~~. ~~A. The water supplier shall send a~~ copy of each notice ~~required to be~~ provided to ADHS and the local county health department ~~shall be sent~~ to the Department within 10 days of issuance.
3. A water supplier ~~who is required to conduct special monitoring that monitors~~ for unregulated ~~volatile organic chemicals [VOC] VOCs~~ pursuant to R18-4-404 shall report the ~~unregulated VOC monitoring analytical~~ results to the Department within 30 days of receipt of the analytical results.
4. A water supplier ~~who is required to conduct special monitoring that monitors~~ for unregulated ~~synthetic organic chemicals [SOC] SOCs~~ pursuant to R18-4-405 shall report the ~~unregulated SOC monitoring analytical~~ results to the Department within 30 days of receipt of the analytical results. ~~A CWS or NTNCWS shall complete initial monitoring and report the unregulated SOC monitoring results to the Department by December 31, 1995.~~

J.L. Failure to comply with monitoring requirements: A water supplier shall report the failure to comply with any monitoring requirement prescribed in this Chapter ~~to the Department~~ within 48 hours except that a public water system ~~which that~~ fails to comply with a total coliform monitoring requirement shall report the monitoring violation to the Department within 10 days of discovery.

K.M. Cross-connection incidents: A water supplier shall submit a written cross-connection incident report to the Department and the local county health department within 5 ~~business~~ days ~~to the Department and the local health authority whenever of the occurrence of~~ a cross-connection ~~problem has occurred which resulted that~~ results in contamination of water provided by the public water system. The report shall address all of the following:

1. Date and time of discovery of the ~~unprotected~~ cross-connection,
2. Nature of the cross-connection ~~problem~~,

3. Affected area,
4. Cause of the cross-connection ~~problem~~,
5. Public health ~~impacts~~ impact,
6. ~~Dates and texts of any public health advisories~~ Date and text of any public health advisory issued,
7. Corrective ~~actions~~ action taken, and
8. Date of completion of corrective ~~actions~~ action.

E.N. Emergencies: A water supplier shall notify the Department, by telephone, as soon as possible but no later than 24 hours after the occurrence of any of the following emergencies:

1. Loss of ~~source of the~~ water supply from a source,
2. Loss of water supply due to major component failure,
3. Damage to power supply equipment or loss of power,
4. Contamination of water in the distribution system ~~as a result of from~~ backflow,
5. Collapse of ~~reservoirs or a reservoir~~, reservoir ~~roofs~~ roof, or pumphouse ~~structures~~ structure,
6. ~~Breaks~~ Break in a transmission or distribution ~~lines~~ line, and
7. Chemical or microbiological contamination of the water supply.

M.O. Waterborne disease ~~outbreaks~~ outbreak: A water supplier shall report to the Department the occurrence of a waterborne disease outbreak that may be attributable to water provided by the public water system ~~to the Department~~ as soon as possible but no later than 24 hours after ~~discovery~~ actual notice of the waterborne disease outbreak.

N.P. Confirmation sample results: A water supplier shall report the analytical results of any confirmation sample required by the Department within 24 hours of receipt of the analytical results.

Θ.Q. Copies of public notices: A water supplier shall submit to the Department within 10 days of the date of completion of public notice, a representative copy of each type of public notice required by R18-4-105 that is distributed, published, posted, or made available to persons served by the public water system or to the media and an affidavit ~~which that~~ describes how ~~the~~ public notice was provided ~~within 10 days of the date of issuance~~.

P.R. Department requests for records: A water supplier shall submit to the Department, within the time stated in

the request, copies of any records ~~required to be maintained that the public system maintains~~ under R18-4-103 or copies of any documents ~~which that~~ the Department is entitled to inspect pursuant to ~~Section §~~ 1445 of the Safe Drinking Water Act.

~~Q.S.~~ ~~The Department reporting forms: A water supplier shall report to the Department the~~ results of all analyses completed pursuant to this Chapter ~~shall be reported to the Department in a manner and~~ on ~~Department-~~ ~~approved~~ forms ~~approved by the Department.~~

~~R.T.~~ ~~Direct reporting:~~ A water supplier may contract with a laboratory or another agent to report monitoring results to the Department. In such cases, the water supplier ~~is~~ ~~remains~~ legally responsible for compliance with reporting requirements.

~~S.U.~~ ~~Reporting limits:~~ A water supplier shall not report an analytical result as ~~a nondetect~~ ~~“not detected” or “ND”~~ ~~without a specific reference to a numeric “less than value” [i.e., “< x” where x is a numeric concentration].~~ ~~A water supplier shall not report a “less than value”~~ at a concentration which exceeds any of the following ~~reporting limits:~~

1. ~~For a single~~ ~~Single~~ point-of-entry sample:
  - a. ~~For an inorganic chemical listed in R18-4-205, except nitrate, nitrite, and fluoride, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds the maximum contaminant level for the inorganic chemical. Inorganic chemicals (except nitrate, nitrite, fluoride, lead, and copper): The reporting limit is the MCL for the inorganic chemical.~~
  - b. ~~For nitrate, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds 5 mg/L. Nitrate: 5 mg/L.~~
  - c. ~~For nitrite, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds 0.5 mg/L. Nitrite: 0.5 mg/L.~~
  - d. ~~For fluoride, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds 2.0 mg/L. Fluoride: 2 mg/L.~~
  - e. ~~For lead, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds 0.005 mg/L. Lead: 0.005 mg/L.~~

- f. ~~For copper, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds 0.050 mg/L. Copper: 0.050 mg/L.~~
- g. ~~For a volatile organic chemical listed in R18-4-211, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds 0.0005 mg/L. VOCs: 0.0005 mg/L.~~
- h. ~~For a synthetic organic chemical listed in R18-4-215 (except atrazine, dibromochloropropane, ethylene dibromide, and di(2-ethylhexyl)phthalate, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds 50% of the maximum contaminant level for the synthetic organic chemical. For atrazine, dibromochloropropane, ethylene dibromide, and di(2-ethylhexyl)phthalate, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds the maximum contaminant level.~~

*The Governor's Regulatory Review Council did not approve the language in paragraph (h) that ADEQ adopted that would have established reporting limits for single point-of-entry samples for synthetic organic chemicals.*

- 2. ~~For composite samples, a water supplier shall not report an analytical result as a nondetect at a concentration which exceeds any of the following: Composite samples:~~
  - a. ~~Inorganic chemicals (except lead and copper): A nondetect shall not be reported in a concentration which exceeds The reporting limit is 1/5 of the ~~maximum contaminant level~~ MCL for ~~an the~~ inorganic chemical.
 
    - i. Lead: 0.001 mg/L
    - ii. Copper: The reporting limit is 0.001 mg/L if the method of analysis is either gas furnace atomic absorption or inductively coupled plasma, or 0.020 mg/L if the method of analysis is atomic absorption direct aspiration.~~
  - b. ~~Volatile organic chemicals: A nondetect shall not be reported in a concentration which exceeds VOCs: 0.0005 mg/L.~~
  - c. ~~Synthetic organic chemicals: Except for toxaphene and ethylene dibromide, a nondetect shall not be reported in a concentration which exceeds the detection limit for the synthetic~~

organic chemical listed in Appendix B. For toxaphene and ethylene dibromide, a nondetect shall not be reported in a concentration which exceeds 1/5 of the maximum contaminant level. SOCs:

<u>Synthetic Organic Chemical</u>	<u>Reporting Limit [in mg/L]</u>
<u>Alachlor</u>	<u>0.0002</u>
<u>Atrazine</u>	<u>0.0001</u>
<u>Benzo(a)pyrene</u>	<u>0.00002</u>
<u>Carbofuran</u>	<u>0.0009</u>
<u>Chlordane</u>	<u>0.0002</u>
<u>2,4-D</u>	<u>0.0001</u>
<u>Dalapon</u>	<u>0.001</u>
<u>Dibromochloropropane</u>	<u>0.00002</u>
<u>Di(2-ethylhexyl)adipate</u>	<u>0.0006</u>
<u>Di(2-ethylhexyl)phthalate</u>	<u>0.0006</u>
<u>Dinoseb</u>	<u>0.0002</u>
<u>Diquat</u>	<u>0.0004</u>
<u>Endothall</u>	<u>0.009</u>
<u>Endrin</u>	<u>0.00001</u>
<u>Ethylene dibromide</u>	<u>0.00001</u>
<u>Glyphosate</u>	<u>0.006</u>
<u>Heptachlor</u>	<u>0.00004</u>
<u>Heptachlor epoxide</u>	<u>0.00002</u>
<u>Hexachlorobenzene</u>	<u>0.0001</u>
<u>Hexachlorocyclopentadiene</u>	<u>0.0001</u>
<u>Lindane</u>	<u>0.00002</u>
<u>Methoxychlor</u>	<u>0.0001</u>
<u>Oxamyl</u>	<u>0.002</u>
<u>PCBs (as decachlorobiphenyl)</u>	<u>0.0001</u>
<u>Pentachlorophenol</u>	<u>0.00004</u>

<u>Picloram</u>	<u>0.0001</u>
<u>Simazine</u>	<u>0.00007</u>
<u>2,4,5-TP (Silvex)</u>	<u>0.0002</u>
<u>2,3,7,8-TCDD (Dioxin)</u>	<u>0.000000005</u>

~~d. For composite samples for lead, a nondetect shall not be reported in a concentration which exceeds 0.001 mg/L.~~

~~e. For composite samples for copper, a nondetect shall not be reported in a concentration which exceeds the detection limit listed for the analytical method used that is prescribed in Appendix B.~~

3. Radiochemical reporting limits: The reporting limit for a radiochemical shall be that concentration which can be counted with a precision of plus or minus 100% at the 95% confidence level (1.96 s where s is the standard deviation of the net counting rate of the sample).

a. Radium-226: 1 pCi/L.

b. Radium-228: 1 pCi/L.

c. Gross alpha particle activity: 3 pCi/L.

d. <u>Man made beta particle and photon emitters</u>	<u>Reporting Limit</u>
i. <u>Tritium</u>	<u>1,000 pCi/L.</u>
ii. <u>Strontium-89</u>	<u>10 pCi/L</u>
iii. <u>Strontium-90</u>	<u>2 pCi/L</u>
iv. <u>Iodine-131</u>	<u>1 pCi/L</u>
v. <u>Cesium-134</u>	<u>10 pCi/L</u>
vi. <u>Gross beta</u>	<u>4 pCi/L</u>
vii. <u>Other radionuclides</u>	<u>1/10 of the</u> <u>applicable limit</u>

~~T. A CWS shall identify and report to the Department whether the following construction materials are present in their distribution system:~~

~~1. Lead from piping, solder, caulking, interior lining of distribution mains, alloys, and home plumbing.~~

- ~~2. Copper from piping and alloys, service lines, and home plumbing.~~
- ~~3. Galvanized piping, service lines, and home plumbing.~~
- ~~4. Ferrous piping materials, such as cast iron and steel.~~
- ~~5. Asbestos cement pipe.~~
- ~~6. Vinyl lined asbestos cement pipe.~~
- ~~7. Coal tar lined pipes and tanks.~~

*ADEQ amended subsection U on reporting limits by changing the term, “nondetect,” to the phrase, “less than value.” ADEQ’s use of the term, “nondetect,” in the proposed rules was confusing and did not accurately communicate ADEQ’s intent in proposing the reporting limits subsection. ADEQ intends to prescribe maximum concentrations for how compliance data is to be reported to ADEQ. The reporting limits apply to compliance data that is reported as “not detected” or as a “less than value.” The purpose of the reporting limits subsection is to ensure that the analytical results that are reported to ADEQ can be used for purposes of determining compliance with applicable drinking water rules. First, ADEQ wants to ensure that compliance data that is reported to ADEQ as “not detected” or “ND” has an accompanying reference to a numeric “less than value” [i.e., “< x” where x is a numeric concentration that represents the detection limit achieved by the testing laboratory]. ADEQ also wants to ensure that other types of “less than values” are reported at concentrations which do not exceed prescribed reporting limits. The reporting limits are established at the maximum concentrations at which “less than values” can be reported and still be useful for purposes of determining compliance with MCLs or other regulatory “triggers” that are found in the drinking water rules.*

*ADEQ amended the paragraph in the proposed rule which prescribes reporting limits for composite SOC samples. The proposed rule stated that the analytical data for a composite SOC cannot be reported as a “nondetect” at a concentration which exceeds the detection limit for that SOC that is prescribed in Appendix B. ADEQ repealed Appendix B in this rulemaking. ADEQ therefore revised the proposed rule by eliminating the cross-reference to detection limits that are listed in Appendix B. The adopted rule states that analytical data from a composite SOC sample cannot be reported as a “less than value” which exceeds the reporting limit for the SOC that is prescribed within a table located in R18-4-104(U)(2)(c). The reporting limits for composite SOC samples are established at*

*the detection limits that are prescribed for SOCs in the National Primary Drinking Water Regulations at 40 CFR §141.24(h)(18). A water supplier must conduct follow-up sampling if a SOC is detected in a composite sample in a concentration that exceeds the prescribed reporting limit.*

*There is no reporting limit for a composite toxaphene sample. Under 40 CFR §141.24(h)(18), the method detection limit for toxaphene is 0.001 mg/L. This method detection limit is established at a concentration that is greater than 1/5 of the MCL for toxaphene [The MCL for toxaphene is 0.003 mg/L, the method detection limit is 0.001 mg/L, and 1/5 of the MCL is 0.0006 mg/L]. R18-4-219(A) prohibits sample compositing when the detection limit for a contaminant is greater than 1/5 of the MCL. ADEQ adopted a special compositing rule which clarifies that samples cannot be composited for toxaphene analysis unless the analytical method used can achieve a detection limit of 1/5 of the MCL for toxaphene or 0.0006 mg/L. In practical terms, this means that samples cannot be composited for toxaphene analysis until an analytical method becomes available which can achieve a detection limit of 0.0006 mg/L. ADEQ added reporting limits for radiochemicals to the rule. The reporting limits are established at concentrations deemed necessary to determine compliance with MCLs and monitoring requirements for radiochemicals.*

*Finally, ADEQ repealed the reporting requirements for construction materials that are used in drinking water distribution systems that were proposed at R18-4-104(T). ADEQ repealed the reporting requirements because it is not clear from R18-4-104(T) exactly what water suppliers must report, how often they must report, or how the required information is to be reported to ADEQ. The failure to include reporting time frames and frequencies makes this subsection unenforceable. Moreover, the purpose of the construction materials reporting requirement is unclear. It is not clear how ADEQ is to use the reported information. For all of these reasons, ADEQ did not include R18-4-104(T) in the adopted rules.*

#### **R18-4-105. Public Notification Requirements**

- A. **MCL or treatment technique violations:** A water supplier of a public water system ~~which that~~ fails to comply with an applicable ~~maximum contaminant level~~ MCL or a treatment technique requirement shall

provide public notice to persons served by the system as follows:

- ~~1. A water supplier shall provide public notice for a violation of a maximum contaminant level or a violation of a treatment technique by both:~~
  - ~~a. 1. Publication of Publish notice in a daily newspaper of general circulation in the area served by the system as soon as possible but not later than 14 days after the violation. If the area served by a public water system is not served by a daily newspaper of general circulation, ~~then~~ the water supplier shall provide public notice by publication in a weekly newspaper of general circulation serving the area; and~~
  - ~~b. 2. Mail delivery of a notice of the violation by direct mail or with the water bill not later than 45 days after the violation. The Department may waive mail delivery of the notice if the water supplier corrects the violation within the 45-day period.~~
- ~~2.B. Acute violations: In addition to the public notice requirements prescribed in subsection ~~(A)(1) (A)~~, a water supplier shall provide public notice by television or radio broadcast for an acute violation defined in this subsection. A water supplier shall provide a copy of the ~~required~~ public notice to radio and television stations ~~which that~~ broadcast to the area served by the system as soon as possible but not later than 72 hours after an acute violation occurs. ~~Acute violations are~~ An acute violation is:
  - ~~a. 1. Violation A violation of a ~~maximum contaminant level MCL~~ for total coliform when fecal coliforms or *E. coli* are present as specified in R18-4-202(A)(3) or R18-4-202(A)(4).~~
  - ~~b. 2. Violation A violation of the ~~maximum contaminant level MCL~~ for nitrate or nitrite ~~as~~ specified in R18-4-205.~~
  - ~~c. 3. Occurrence of a waterborne disease outbreak that may be attributable to water distributed by the public water system An occurrence of a waterborne disease outbreak that is attributable to water distributed by the public water system.~~~~
- ~~B.C. Monitoring violations, exemptions, and variances: A water supplier of a public water system ~~which that~~ fails to conduct required monitoring ~~required by this Chapter~~, fails to use approved analytical methods, or ~~which is granted that obtains~~ an exemption or variance ~~by from~~ the Department shall give public notice ~~to persons served by the system by publication in a daily newspaper of general circulation within 3 months of the~~~~

~~monitoring violation or the granting of an exemption or variance. If the area served by a public water system is not served by a daily newspaper of general circulation, then a water supplier shall provide public notice by publication in a weekly newspaper of general circulation serving the area within 3 months of the monitoring violation or the granting of an exemption or variance as follows:~~

- ~~1. Publish notice in a daily newspaper of general circulation within 3 months of the monitoring violation or the grant of an exemption or variance, or~~
- ~~2. If the area served by a public water system is not served by a daily newspaper of general circulation, a water supplier shall publish notice in a weekly newspaper of general circulation serving the area within 3 months of the monitoring violation or the grant of an exemption or variance.~~

6D. Alternative public notification procedures:

1. Community water systems: A water supplier of a community water system that is located in an area that is not served by radio, television, or a daily or weekly newspaper of general circulation shall provide public notice by hand delivery or continuous posting in conspicuous places within the area served by the system. Posting shall continue for a minimum of 10 days and as long as any a violation exists or for as long as an exemption or variance remains in effect.
  - a. Acute violations: A water supplier shall provide public notice of an acute violation by hand delivery or posting as soon as possible but not later than 72 hours after an acute violation occurs;
  - b. MCL or treatment technique violations: A water supplier shall provide public notice of a MCL or treatment technique violation by hand delivery or posting within 14 days after a violation occurs.
  - c. Monitoring ~~violations or the granting of an exemption or variance~~ violations, exemptions, and variances: A water supplier shall provide public notice by hand delivery or by posting within 3 months of a monitoring violation or the granting grant of an exemption or variance by the Department.
2. Noncommunity water systems: ~~In lieu~~ Instead of providing public notice as prescribed in subsection (A), ~~(B), or (C) of this Section~~, a water supplier of a noncommunity water system may provide public notice by hand delivery or by continuous posting in conspicuous places within the area served by the noncommunity system. Posting shall continue for a minimum of 10 days and for as long as any a violation exists or ~~for as long as~~ an exemption or variance remains in effect.
  - a. Acute violations: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting as soon as possible but not later than 72 hours after an acute violation occurs;

- b. MCL or treatment technique violations: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting within 14 days after a MCL or treatment technique violation occurs.
- c. Monitoring ~~violations or the granting of an exemption or variance~~ violations, exemptions, and variances: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting within 3 months of ~~the a~~ monitoring violation or the granting grant of an exemption or variance by the Department.

D E. Repeat public notice: The water supplier shall give repeat public notice at least once every 3 months by mail delivery, ~~direct mail, or with the water bill~~ (by direct mail or with the water bill) or by hand delivery for as long as any violation exists. The water supplier shall give repeat public notice of the existence of a variance or exemption every 3 months for as long as the variance or exemption remains in effect. For a community water ~~systems system and or a~~ noncommunity water ~~systems which system that~~ provide provides public notice by posting, repeat public notice requirements are satisfied by continuous posting.

E F. Limited public notice: The water supplier may give public notice to only a portion of the population served by a public water system if the water supplier demonstrates that only a segment of the population served by the public water system is affected by the problem which results in the need for public notice.

F G. Notice to new customers: A water supplier shall give a copy of the most recent public notice for any outstanding violation of a ~~maximum contaminant level~~ MCL, treatment technique requirement, or ~~any a~~ violation of a schedule of compliance prescribed pursuant to a variance or exemption to all new billing units or hookups prior to or at the time service begins.

G H. General content of a public notice: ~~The contents of each~~ Each public notice shall provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the public water system is taking to correct the violation, the necessity for using alternative water supplies, ~~if any~~; and any measures the consumer should take to minimize exposure until the violation is

corrected. Each public notice shall be conspicuous and free of unduly technical language, small print, editorial comments, or similar problems that frustrate the purposes of the notice. Each public notice shall include the name and telephone number of a person at the public water system who can be contacted for additional information about the notice. Where appropriate, the public notice shall be multi-lingual.

**H.I. Mandatory health effects language:** A water supplier shall include the mandatory health effects language prescribed in Appendix A in a public notice for the violation of a ~~maximum contaminant level MCL~~, or treatment technique, ~~and in or~~ a public notice regarding the ~~granting grant~~ or continued existence of a variance or exemption.

~~I. A water supplier shall submit to the Department a copy of any public notice and an affidavit which describes how public notice was provided within 10 days of the date of issuance of the public notice.~~

*ADEQ repealed this subsection because this reporting requirement is addressed in R18-4-104(Q).*

J. The Department shall not provide public notice on behalf of the water supplier. If a water supplier fails to notify the public in accordance with the requirements of this Section, ~~then~~ the Department may provide notice to persons served by the public water system by any of the methods listed in this Section or by issuance of a press release. The water supplier remains legally responsible for ensuring that the requirements of this Section are met.

#### **R18-4-109. Sample Collection, Preservation, and Transportation**

~~A. Sample collection shall be conducted~~ The water supplier shall collect samples using the sample preservation, container, and maximum holding time procedures that are prescribed by the Arizona Department of Health Services or the U.S. Environmental Protection Agency for the analytical method used.

~~B. A water supplier shall identify each compliance sample as such when the sample is submitted to a testing laboratory and before the laboratory conducts any analysis of the sample.~~

*ADEQ originally proposed to add R18-4-109(B). ADEQ received several public comments questioning the need for this provision. Several persons commented that if subsection B was added, ADEQ also needed to add rules which clearly prescribe procedures for sample invalidation. ADEQ acknowledges that subsection (B) may raise questions regarding compliance sample invalidation that are not addressed elsewhere in the drinking water rules.*

*ADEQ did not propose a rule that addressed the subject of sample invalidation in this rulemaking. The promulgation of sample invalidation procedures would require supplemental rulemaking and ADEQ does not want to further delay this rulemaking to consider all of the relevant issues. Also, ADEQ concluded that the proposed subsection B does not accomplish its intended purpose. The intended purpose of the proposal to require identification of compliance samples before laboratory analysis was to limit the practice of collecting samples until a desirable result is obtained and reporting only those analytical results to ADEQ which comply with safe drinking water requirements. ADEQ concludes that the prior identification of compliance samples before analysis will not prevent a water supplier from collecting samples until a desirable result is obtained. Under the current rules, water suppliers are responsible for reporting analytical results to ADEQ. While the current rules allow a water supplier to contract with a testing laboratory and have analytical results of compliance samples reported directly to ADEQ by the laboratory, nothing in the current rules requires that a water supplier make arrangements with a testing laboratory for direct reporting to ADEQ. ADEQ acknowledges that a water supplier may contract with a testing laboratory and make arrangements to have all analytical results reported to the water supplier. Thus, a water supplier who wishes to collect samples until a desirable result is obtained will still be able to do so, even if the rules require the identification of compliance samples prior to submittal to the laboratory for analysis.*

*The determination of compliance with Safe Drinking Water Act requirements depends upon self-monitoring by Arizona's water suppliers. ADEQ must rely on water suppliers to comply with Safe Drinking Water Act monitoring requirements and to report the monitoring results to ADEQ as required by the law. The prior identification of compliance samples will not prevent monitoring fraud. Moreover, the proposed requirement to identify compliance samples prior to laboratory analysis undermines the level of trust that is a necessary underpinning for any regulatory program which relies upon self-monitoring by the regulated community. For all of these reasons, ADEQ withdrew subsection (B) and did not include it in the adopted rule.*

**R18-4-116. Emergency Operation Plans**

- A. ~~Each~~ The water supplier for a community water system shall develop and keep an emergency operations plan in an easily accessible location. ~~The~~ At a minimum, the emergency operations plan shall detail the steps that

the community water system will take to assure continuation of service, ~~as a minimum,~~ in the following emergency situations:

1. Loss of ~~a source of the water supply,~~
  2. Loss of water supply due to major component failure,
  3. Damage to power supply equipment or loss of power,
  4. Contamination of water in the distribution system ~~as a result of from~~ backflow,
  5. Collapse of ~~reservoirs or a reservoir,~~ reservoir ~~roofs roof,~~ or pumphouse ~~structures structure,~~
  6. ~~Breaks A break~~ in a transmission or distribution ~~lines line,~~ and
  7. Chemical or microbiological contamination of the water supply.
- B. The emergency operations plan required by subsection (A) ~~of this Section~~ shall address all of the following ~~issues:~~
1. ~~The provision Provision~~ of alternate sources of water during the emergency,
  2. ~~Notification Notice~~ procedures ~~relating to for~~ regulatory agencies, news media, and users ~~which shall include personal protection and water use guidelines,~~
  3. Disinfection and testing of the distribution system once service is restored,
  4. Identification of critical system components that shall remain in service or be returned to service quickly,
  5. Critical spare parts inventory, and
  6. Staff training in emergency response procedures.

**R18-4-117. Unsafe Supplies**

The Department unchanged. Community water systems and nontransient, noncommunity water systems still will have to may order a public water system to disconnect a source to protect the public health from an acute health risk ~~that is attributable to the source.~~ An acute health risk is posed when one of the following occurs:

1. ~~There is a A~~ violation of a ~~maximum contaminant level MCL~~ for total coliform ~~when and~~ fecal coliform or *E. coli* are present that is attributable to the source,
2. ~~There is a A~~ violation of a ~~maximum contaminant level MCL~~ for nitrate or nitrite that is attributable to the

source, or

3. ~~There is an An~~ occurrence of a waterborne disease outbreak that is attributable to the source.

**R18-4-119. Additives**

- A. All products added directly to water during production or treatment shall conform to ~~National Sanitation Foundation Standard 60, amended as of May, 1996 American National Standards Institute / NSF International Standard 60-1996a, Drinking Water Treatment Chemicals - Health Effects, NSF International, 3475 Plymouth Road, P.O. Box 130140, Ann Arbor, Michigan, (Revised November, 1996)~~ (and no future amendments), which is incorporated by reference and on file with the Office of the Secretary of State and the Department, Products covered by this ~~requirement subsection~~ include: ~~water well products and those used for disinfection, oxidation, filtration, scale control, corrosion control, pH adjustment, softening, precipitation, sequestering, fluoridation, coagulation, flocculation, and miscellaneous treatments.~~
  1. ~~Coagulation and flocculation chemicals,~~
  2. ~~Chemicals for corrosion and scale control,~~
  3. ~~Chemicals for softening, precipitation, sequestering, and pH adjustment,~~
  4. ~~Disinfection and oxidation chemicals,~~
  5. ~~Chemicals for fluoridation, defluoridation, algae control, and dechlorination,~~
  6. ~~Dyes and tracers,~~
  7. ~~Antifreezes, antifoamers, regenerants, and separation process scale inhibitors and cleaners,~~
  8. ~~Water well drilling and rehabilitation aids, and~~
  9. ~~Miscellaneous water supply products.~~
- B. ~~Except as identified in subsections (D) and (E), Materials materials~~ or products installed after January 1, 1993, that come into contact with water or with water treatment chemicals shall conform to ~~National Sanitation Foundation Standard 61, amended as of January, 1995 American National Standards Institute / NSF International Standard 61-1997 b, Drinking Water System Components - Health Effects, NSF International, 3475 Plymouth Road, P.O. Box 130140, Ann Arbor, Michigan (Revised July, 1997)~~ (and no future amendments), which is incorporated by reference and on file with the Office of the Secretary of State

and the Department. Products and materials covered by this ~~requirement subsection~~ include:

1. Process media, such as carbon and sand;
  2. Joining and sealing materials, such as solvents, cements, welding materials, and gaskets;
  3. Lubricants;
  4. Pipes and related products, such as tanks and fittings;
  5. Mechanical devices used in treatment, transmission, or distribution systems such as valves, chlorinators, and separation membranes; and
  6. Surface coatings and paints.
- C. Evidence that a product conforms to the requirements of this Section shall be the appearance on the product or product package of the ~~seal of a certifying entity, which has been accredited to provide such certification by the American National Standards Institute NSF Listing Mark.~~
- D. ~~Where a material or product that comes into contact with drinking water is essential to the design, construction, or operation of a public water system and it does not conform to the National Sanitation Foundation standard or it conforms to the National Sanitation Foundation standard but is available from only one source, then a water supplier may use any of the following materials or products:~~
- ~~1. Materials or products composed entirely of ingredients which are determined to be appropriate for addition to potable water or aqueous food by the U.S. Environmental Protection Agency, the Food and Drug Administration, or other federal agency.~~
  - ~~2. Materials or products composed entirely of ingredients listed in the National Academy of Sciences "Water Chemicals Codex."~~
  - ~~3. Materials or products which are consistent with the specifications of the American Water Works Association.~~
  - ~~4. Materials or products which are designed for use in drinking water systems which are consistent with the specifications of the American Society for Testing and Materials.~~
  - ~~5. Materials or products which are in use or which have been used historically in drinking water systems, consistent with standard practice, which have not been demonstrated in past applications in the United States to have contributed to water contamination.~~

D. The Director shall consider standards for chemicals, materials, or equipment that have been certified by the National Sanitation Foundation as complying with the standards required by this Section. In those instances where chemicals, materials, and equipment that come into contact with drinking water are essential to the design, construction, or operation of the drinking water system and have not been certified by the National Sanitation Foundation or have National Sanitation Foundation certification but are not available from more than one source, the standards shall provide for the use of alternatives which include:

1. Products composed entirely of ingredients determined by the Environmental Protection Agency, the Food and Drug Administration, or other federal agencies as appropriate for addition to potable water or aqueous food.
2. Products composed entirely of ingredients listed in the National Academy of Sciences "Water Chemicals Codex."
3. Products consistent with the specifications of the American Water Works Association.
4. Products designed for use in drinking water systems that are consistent with the specifications of the American Society for Testing and Materials.
5. Products historically used or in use in drinking water systems, consistent with standard practice, which have not been demonstrated during past applications in the United States to contribute to water contamination.

ADEQ revised subsection (D) in response to comments from the Governor's Regulatory Review Council. ADEQ was advised that if a statute is quoted in a rule, it must be quoted verbatim and italicized. Subsection (D) is a restatement of A.R.S. §49-353.01(B). ADEQ revised the subsection to italicize it and quote the statute verbatim.

E. The following materials or products are not covered by the requirement to conform to National Sanitation Foundation Standard 61:

1. Concrete structures, tanks, and treatment tank basins constructed on-site that are not normally coated or sealed if the construction materials used in the concrete are consistent with subsection (D). Any coatings or sealants specified by the design engineer shall comply with National Sanitation Foundation Standard 61.

2. Earthen reservoirs and canals located upstream of water treatment.
3. Drinking water treatment plants constructed on-site or at a job shop that are comprised of components that comply with subsections (B),(C), and (D).
4. Galvanized steel tanks and synthetic tanks constructed of resins that are:
  - a. Approved by the Food and Drug Administration to be used in contact with drinking water or aqueous food.
  - b. Less than 15,000 gallons in capacity, and
  - c. Are used in public water systems with 500 or fewer service connections.
5. Stainless steel pipes, water treatment plant components, and water distribution system components.

*ADEQ updated the incorporations by reference of NSF Standards 60 and 61 and added a provision in paragraph E to clarify the application of the additives rule. Paragraph E clarifies that certain materials and products which come into contact with drinking water are not covered by the requirement to comply with National Sanitation Foundation Standard 61.*

**R18-4-121. Enforcement**

- A. A water supplier ~~who that~~ constructs, operates, or maintains a public water system contrary to the provisions of this Chapter or ~~who~~ fails to maintain the quality of water within the public water system as required by this Chapter ~~shall be is~~ subject to the actions provided in A.R.S. §49-142 and §49-354.
- B. If the Department determines that a public water system is not in compliance with any of the provisions of this Chapter, ~~then~~ the Department may issue an order to the water supplier ~~which that~~ requires the public water system to make no further service connections or ~~which that~~ limits the number of service connections until the Department determines that the public water system achieves compliance.
- C. The Department may determine compliance or initiate enforcement action based upon analytical results and other information compiled by the Department or other federal, state, or local agencies.
- D. The Department shall round compliance data to the same number of significant figures as the MCL in question to determine compliance with the MCL.

*ADEQ added subsection (D) to clarify how compliance data will be used to determine compliance with maximum*

contaminant levels.

**R18-4-201. Maximum Contaminant Levels; Public Water Systems Affected**

- A. Except as provided in this Section, the ~~maximum contaminant levels~~ MCLs prescribed in this Article apply to water distributed by a public water system.
- B. ~~Only the maximum contaminant levels~~ Except as provided in subsection (D), only the MCLs for nitrate, nitrite, and total coliform apply to water distributed by a ~~transient, noncommunity water system~~ TNCWS. ~~The interim maximum contaminant levels for turbidity apply to a transient, noncommunity water system that is a surface water system which does not provide filtration.~~
- C. The ~~maximum contaminant levels~~ MCLs for fluoride, arsenic, and radiochemicals apply only to water distributed by a ~~community water system~~ CWS.
- D. The interim ~~maximum contaminant levels~~ MCLs for turbidity apply only to water that is distributed by a surface water system ~~which that~~ does not provide filtration.
- E. The ~~maximum contaminant level~~ MCL for total trihalomethanes applies only to water distributed by a ~~community water system which~~ CWS that serves a population of 10,000 or more and ~~which that~~ adds a halogenated disinfectant to the water in any part of the treatment process.

**R18-4-205. Inorganic Chemicals; MCLs**

- A. Water that is distributed by a ~~community water system~~ CWS or a ~~nontransient, noncommunity water system~~ NTNCWS shall not exceed the following ~~maximum contaminant levels~~ MCLs for inorganic chemicals:

<u>Contaminant</u>	<u>MCL(mg/L)</u>	<u>Alternate MCL (mg/L)</u>
Antimony	0.006	
Arsenic <sup>a</sup>	0.05	
Asbestos	7 MFL <sup>b</sup>	
Barium	2	
Beryllium	0.004	
Cadmium	0.005	

Chromium	0.1	
Cyanide (as free cyanide)	0.2	
Fluoride <sup>a</sup>	4.0	
Mercury	0.002	
Nitrate (as N)	10	20°
Nitrite (as N)	1	
Total nitrate/nitrite	10	20°
Selenium	0.05	
Thallium	0.002	

<sup>a</sup> The ~~maximum contaminant levels~~ MCLs for fluoride and arsenic apply to community water systems only.

<sup>b</sup> "MFL" means million fibers per liter greater than ~~ten~~ 10 microns in length.

<sup>c</sup> The Department may allow a public noncommunity water system to comply with the alternate maximum contaminant level MCLs for nitrate and for total nitrate/nitrite provided all of the following conditions are met: 1) the public water system is a noncommunity water system, 2) water provided by the noncommunity water system will not be available to children under 6 months of age, 3) the water supplier continuously posts notice of the fact that nitrate levels may exceed the MCL of 10 mg/L, 4) the water supplier continuously posts notice of the potential health effects ~~exposure to~~ on infants under 6 months of age; 5)

the  
water  
supplier  
notifies  
the  
Departm  
ent  
annually  
of

nitrate  
levels  
that  
exceed  
10  
mg/L,  
and

6) no adverse health effects result.

- B. Water that is distributed by a ~~transient, noncommunity water system~~ TNCWS shall not exceed the ~~maximum contaminant levels~~ MCLs for nitrate, nitrite, and total nitrate/nitrite. The ~~maximum contaminant levels~~ MCLs for other inorganic chemicals listed in ~~R18-4-205 this section~~ do not apply to water that is distributed by a ~~transient, noncommunity water system~~ TNCWS.

**R18-4-206. Monitoring Requirements for Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Selenium, and Thallium**

- A. A ~~transient, noncommunity water system~~ TNCWS is not required to monitor for the inorganic chemicals listed in this Section. ~~Community water systems [CWS] and nontransient, noncommunity water systems [NTNCWS]~~ Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor for the following inorganic chemicals:
1. Each CWS shall ~~conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels~~ MCLs for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium.
  2. Each NTNCWS shall ~~conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels~~ MCLs for all of the inorganic chemicals listed in subsection (A)(1) except fluoride and arsenic.
- B. Each CWS or NTNCWS shall conduct initial monitoring for inorganic chemicals listed in this Section in the monitoring year designated by the Department ~~within the initial compliance period~~ according to the

following schedule:

- ~~1. Each CWS shall conduct initial monitoring for arsenic, barium, cadmium, chromium, fluoride, mercury, and selenium in the compliance period that begins on January 1, 1993.~~
- ~~2. Each NTNCWS shall conduct initial monitoring for barium, cadmium, chromium, mercury, and selenium in the compliance period that begins on January 1, 1993.~~
- ~~3. Each CWS and NTNCWS serving 150 or more service connections shall conduct initial monitoring for antimony, beryllium, cyanide, and thallium in the compliance period that begins January 1, 1993.~~
- ~~4. Each CWS AND NTNCWS with less than 150 service connections shall conduct initial monitoring for antimony, beryllium, cyanide, and thallium in the compliance period that begins January 1, 1996.~~

*ADEQ repealed the schedules for initial monitoring for inorganic chemicals in subsections (B)(1)-(4) because the deadlines in (B)(1), (2), and (3) have expired. The deadline in (B)(4) expires on December 31, 1998. The compliance periods that are referenced in (B)(1) - (3) ended on December 31, 1995. The compliance period in (B)(4) ends December 31, 1998. With respect to the deadline in (B)(4), ADEQ already has designated initial monitoring years for public water systems with less than 150 service connections for antimony, beryllium, cyanide, and thallium monitoring. ADEQ designated initial monitoring years for public water systems with less than 150 service connections for antimony, beryllium, cyanide, and thallium monitoring in 1996, 1997, and 1998. Small public water systems with 1996 and 1997 initial monitoring years should have completed their initial monitoring. ADEQ notified small public water systems that have initial monitoring years in 1998 that they must complete initial monitoring for antimony, beryllium, cyanide, and thallium by December 31, 1998. The schedule in (B)(4) is no longer necessary.*

- C. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor for inorganic chemicals at each sampling point as prescribed in R18-4-218.
- D. A CWS or NTNCWS may composite samples for inorganic chemicals as prescribed in R18-4-219.
- E. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor at the following frequencies:
  1. Each CWS or NTNCWS shall take 1 sample at each groundwater sampling point once every

3 years.

2. Each CWS or NTNCWS shall take 1 sample annually at each surface water sampling point.

F. A water supplier may use monitoring data collected prior to January 1, 1993 collected before the initial monitoring year to satisfy initial monitoring requirements at a sampling point provided at least one sample was taken after January 1, 1990 was taken in the 3 years immediately prior to the initial monitoring year.

*ADEQ deleted outdated references to "January 1, 1993" and "January 1, 1990." ADEQ revised the rule to permit the use of monitoring data that is collected prior to the initial monitoring year to satisfy initial monitoring requirements at a sampling point.*

G. If the analytical results from a sampling point indicate that the concentration of an inorganic chemical exceeds a maximum contaminant level MCL, then a CWS or NTNCWS shall take quarterly samples at that sampling point, beginning in the calendar quarter immediately following collection of the sample which that exceeded the maximum contaminant level MCL. A CWS or NTNCWS shall continue quarterly sampling at the sampling point until:

1. Groundwater sampling points: A minimum of 2 consecutive quarterly samples are taken and the concentration of the inorganic chemical in each sample is below the maximum contaminant level MCL. If this criterion is met, the Department may decrease the monitoring frequency from quarterly to 1 sample every 3 years. The Department's decision to reduce monitoring frequency shall be in writing.

2. Surface water sampling points: A minimum of 4 consecutive quarterly samples are taken and the concentration of the inorganic chemical in each sample is below the maximum contaminant level MCL. If this criterion is met, the Department may decrease monitoring frequency from quarterly to annually. The Department's decision to reduce monitoring frequency shall be in writing.

H. Where If the analytical results of an initial sample indicate that there is an exceedance of exceed a maximum contaminant level MCL, the Department may require that 1 a confirmation sample be taken as soon as possible but no later than 2 weeks after the initial sample was taken, but not to exceed 2 weeks, at the same sampling point.

I. Compliance with a maximum contaminant level MCL for an inorganic chemical shall be determined is based

upon the analytical result from a single sample obtained at each sampling point, unless ~~a confirmation sample is required by the Department~~ the Department requires a confirmation sample. If the Department requires ~~that~~ a confirmation sample ~~be taken, then~~ the analytical results of the initial sample and the confirmation sample shall be averaged. The resulting average shall be used to determine compliance with the ~~maximum contaminant level MCL~~.

- J. A water supplier may apply to the Department to conduct monitoring at a sampling point more frequently than the monitoring frequency specified in subsection (E). If the Department gives written approval to conduct more frequent monitoring at a sampling point, ~~then~~ compliance shall be determined by a running annual average at ~~that the~~ sampling point. ~~A water supplier shall not conduct monitoring at a sampling point at a frequency greater than quarterly.~~ If the running annual average at the sampling point is greater than the ~~maximum contaminant level, then MCL~~, the public water system is out of compliance. If any ~~1 sample would cause~~ single analytical result causes the running annual average to exceed the ~~maximum contaminant level MCL, then~~ the public water system is immediately out of compliance ~~immediately~~.

*ADEQ eliminated the sentence which limits the frequency of compliance monitoring at a sampling point to no more than quarterly. This limitation on monitoring frequency is unnecessary since a water supplier must obtain written approval from ADEQ to conduct more frequent compliance monitoring at a sampling point. Also, ADEQ agrees that there is no reason to limit the frequency of compliance monitoring at a sampling point to quarterly.*

- K. A water supplier may make a written request to reduce monitoring frequency for an inorganic chemical at a sampling point. The Department may reduce monitoring frequency at a sampling point as follows:

1. Groundwater sampling points: The Department may reduce monitoring frequency at a groundwater sampling point from once every 3 years to a less frequent basis if a public water system has monitored at least once every 3 years for 9 years at the groundwater sampling point and all previous analytical results for the inorganic chemical are below the ~~maximum contaminant level MCL~~. ~~At least 1 sample shall have been taken after January 1, 1990.~~
2. Surface water sampling points: The Department may reduce monitoring frequency at a surface water sampling point from annually to a less frequent basis if the surface water system has monitored annually at the surface water sampling point for at least 3 consecutive years and all

previous analytical results for the inorganic chemical are below the ~~maximum contaminant level~~  
MCL. ~~At least 1 sample shall have been taken after January 1, 1990.~~

*ADEQ deleted the sentences in (K)(1) and (K)(2) above which require that at least one sample be taken after January 1, 1990 because the requirement is no longer necessary. All public water systems conducted routine monitoring for inorganic chemicals under the standardized monitoring framework for the compliance period that began January 1, 1993 and ended December 31, 1996. Consequently, all public water systems have taken at least one sample for inorganic chemicals after January 1, 1990.*

3. The ~~Department may reduce monitoring frequency at a sampling point for a term not to term of~~  
reduced monitoring shall not exceed 9 years.
4. A CWS or NTNCWS shall take at least 1 sample at ~~each the~~ sampling point during the ~~term of~~  
reduced monitoring term.
5. In determining the appropriate reduced monitoring frequency at a sampling point ~~during the term of~~  
reduced monitoring, the Department shall consider the following factors:
  - a. Reported concentrations of the inorganic chemical from all previous monitoring,
  - b. The degree of variation in the reported concentrations of the inorganic chemical, and
  - c. Other factors that may affect the concentration of the inorganic chemical such as changes  
in groundwater pumping rates, ~~changes in~~ the configuration of the CWS or NTNCWS, ~~or~~  
~~changes in~~ operating procedures, stream flows, or source water characteristics.
6. ~~A decision by the Department~~ The Department's decision to reduce monitoring frequency at a  
sampling point shall be in writing and shall ~~set forth~~ specify the grounds for the decision. A water  
supplier may make a written request for reduced monitoring or ~~reduced monitoring may be granted~~  
~~on the Department's initiative~~ the Department may grant reduced monitoring on its own. A water  
supplier shall provide documentation of analytical results ~~which supports~~ that support the request  
for reduced monitoring. When a CWS or NTNCWS submits new data or ~~when if~~ other data  
relevant to the public water system's appropriate monitoring frequency ~~becomes~~ become available,  
the Department shall review ~~that the~~ data and, ~~where if~~ appropriate, revise its determination of  
appropriate monitoring frequency.

7. A CWS or NTNCWS ~~which that~~ uses a new source is not eligible for reduced monitoring until it completes 3 consecutive rounds of monitoring from the new source ~~have been completed~~.
- L. The Department may grant a public water system a waiver ~~for the monitoring of cyanide from cyanide monitoring~~ if the Department determines that the system is not vulnerable ~~due to absence of any because there is no~~ industrial source of cyanide.

**R18-4-208. Nitrate; Monitoring Requirements**

- A. All public water systems ~~including transient, noncommunity water systems~~, shall ~~conduct monitoring monitor~~ to determine compliance with the ~~maximum contaminant level MCL~~ for nitrate.  
*ADEQ revised this subsection to make it more concise. The definition of the term, "public water systems," includes transient, noncommunity water systems. It is unnecessary to specifically state that TNCWS are included..*
- B. ~~Monitoring to determine compliance with the maximum contaminant level for nitrate shall be conducted~~ A public water system shall monitor to determine compliance with the MCL for nitrate at each sampling point as prescribed in R18-4-218.
- C. A public water system may composite nitrate samples as prescribed in R18-4-219.
- D. Each public water system shall ~~conduct monitoring monitor~~ for nitrate at the following frequencies:
1. A ~~community water system [CWS] or a nontransient, noncommunity water system [NTNCWS]~~ A CWS or NTNCWS shall monitor annually at each groundwater sampling point.
  2. A CWS or NTNCWS shall monitor quarterly at each surface water sampling point.

3. ~~All transient, noncommunity water systems~~ A TNCWS shall monitor annually at each sampling point.
- E. The Department may reduce the monitoring frequency at a surface water sampling point from quarterly to annually if the analytical results from the sampling point demonstrate that the concentration of nitrate is ~~less than~~ < 5 mg/L for 4 consecutive quarters. A CWS or NTNCWS shall return to quarterly monitoring at a surface water sampling point if the analytical result for any sample indicates that the concentration of nitrate is ~~greater than or equal to~~ 5 mg/L. If the Department reduces the monitoring frequency at a surface water sampling point from quarterly to annually, ~~then~~ the annual sample shall be taken during the quarter which previously yielded the highest analytical result for nitrate. The Department's decision to allow a CWS or NTNCWS to reduce monitoring frequency ~~at a surface water sampling point~~ shall be in writing.
- F. A CWS or NTNCWS ~~which that~~ collects a sample from a groundwater sampling point with a concentration of nitrate that is ~~greater than or equal to~~ 5 mg/L shall increase the monitoring frequency at that sampling point from annually to quarterly. The Department may subsequently reduce the monitoring frequency at ~~that the~~ the groundwater sampling point from quarterly to annually if the analytical results for 4 consecutive quarterly samples are ~~less than~~ ≤ 10 mg/L. If the Department reduces the monitoring frequency at the groundwater sampling point from quarterly to annually, ~~then~~ the annual sample shall be taken during the quarter ~~which that~~ previously yielded the highest analytical result for nitrate. If the Department reduces the monitoring frequency at the groundwater sampling point from quarterly to annually, a subsequent detection of nitrate in a concentration that is ~~greater than or equal to~~ 5 mg/L and ~~less than or equal to~~ 10 mg/L shall not trigger quarterly monitoring. The Department's decision to allow a CWS or NTNCWS to reduce monitoring frequency ~~at a groundwater sampling point to annually~~ shall be in writing.
- G. The Department shall not accept monitoring data collected before ~~January 1, 1993~~ the initial monitoring year to satisfy initial monitoring requirements for nitrate.

*ADEQ revised subsection (G) to repeal an outdated reference to January 1, 1993.*

- H. Monitoring waivers for nitrate are ~~not allowed~~ prohibited.
- I. If ~~the analytical result obtained from a sample indicates that~~ the concentration of nitrate in a sample exceeds 10 mg/L, ~~then~~ a water supplier shall take a confirmation sample at the same sampling point within 24 hours

of ~~receipt of receiving~~ the analytical results of the initial sample. A water supplier ~~who that~~ is unable to take a confirmation sample within 24 hours shall issue public notice to persons served by the system in accordance with R18-4-105. A water supplier ~~who that~~ does not take a confirmation sample within 24 hours and ~~who~~ issues public notice shall take and complete the analysis of a confirmation sample within 2 weeks of receiving the analytical results of the initial sample.

- J. Compliance with the ~~maximum contaminant level MCL~~ for nitrate ~~shall be determined is~~ based upon the average of the analytical results of the initial sample and the confirmation sample. If a water supplier fails to take the required confirmation sample within the time ~~frames~~ prescribed in subsection (I), ~~then~~ compliance shall be ~~determined~~ based upon the analytical results of the initial sample.

#### **R18-4-209. Nitrite; Monitoring Requirements**

- A. All public water systems ~~including transient, noncommunity water systems~~, shall ~~conduct monitoring monitor~~ to determine compliance with the ~~maximum contaminant level MCL~~ for nitrite.
- B. Each public water system shall ~~conduct monitoring to determine compliance with the maximum contaminant level for nitrite monitor for nitrite~~ at each sampling point as prescribed in R18-4-218.
- C. A public water system may composite nitrite samples as prescribed in R18-4-219.
- D. A public water system shall take 1 sample at each sampling point during the initial compliance period. Each public water system shall ~~conduct monitoring monitor~~ for nitrite in the initial monitoring year ~~specified designated~~ by the Department within the initial compliance period.
- E. If the analytical result of the initial nitrite sample at a sampling point is ~~less than~~  $< 0.5$  mg/L (as N), ~~then~~ a public water system is not required to take another nitrite sample at that sampling point until the first compliance period of the next compliance cycle.
- F. If the analytical result of the initial nitrite sample at a sampling point is ~~greater than or equal to~~  $\geq 0.5$  mg/L (as N), ~~then~~ a public water system shall conduct quarterly monitoring at that sampling point for at least ~~four~~ 4 consecutive quarters.
- G. The Department may reduce the monitoring frequency at a sampling point from quarterly to annually if ~~the results of 4 consecutive quarterly samples demonstrate that~~ the concentration of nitrite in ~~each sample~~ 4

~~consecutive quarterly samples~~ is ~~less than~~  $< 1$  mg/L (as N). If the Department reduces the monitoring frequency from quarterly to annually, ~~then~~ the public water system shall take ~~subsequent~~ annual samples during the quarter which previously yielded the highest analytical result for nitrite. If the Department reduces the monitoring frequency at a sampling point from quarterly to annually and there is a subsequent detection of nitrite at ~~that the~~ sampling point in a concentration that is ~~greater than or equal to~~  $\geq 0.5$  mg/L ~~and less than or equal to but~~  $< 1$  mg/L, the detection shall not trigger quarterly monitoring. The Department's decision to reduce monitoring frequency shall be in writing.

- H. The Department shall not accept monitoring data collected before ~~January 1, 1993~~ the initial monitoring year to satisfy initial monitoring requirements for nitrite.

*ADEQ revised subsection (H) to repeal an outdated reference to January 1, 1993.*

- I. Monitoring waivers for nitrite are ~~not allowed prohibited~~.
- J. ~~A public water system shall take a confirmation sample if the analytical result of the initial sample indicate that If the concentration of nitrite exceeds in a sample  $> 1$  mg/L (as N). The confirmation sample shall be taken a water supplier shall take a confirmation sample~~ at the same sampling point within 24 hours of ~~receipt of receiving the~~ analytical results of the initial sample. A water supplier ~~who that~~ cannot take a confirmation sample within 24 hours shall issue public notice to persons served by the system in accordance with R18-4-105. ~~and A water supplier that cannot take a confirmation sample within 24 hours and that issues public notice~~ shall take and complete the analysis of a confirmation sample within 2 weeks of receiving the analytical results of the initial sample.
- K. Compliance with the ~~maximum contaminant level MCL~~ for nitrite ~~shall be determined is~~ based upon the average of the analytical results of the initial sample and the confirmation sample. If a water supplier fails to take the required confirmation sample, ~~then~~ compliance ~~shall be determined is~~ based upon the analytical results from the initial sample.

**R18-4-212. Volatile Organic Chemical; Monitoring Requirements**

- A. ~~Community water systems [CWS] and nontransient, noncommunity water systems [NTNCWS]~~ Each CWS and NTNCWS shall ~~conduct monitoring monitor~~ to determine compliance with the ~~maximum contaminant levels MCLs~~ for the ~~volatile organic chemicals VOCs~~ listed in R18-4-211. ~~Transient, noncommunity water~~

~~systems are~~ A TNCWS is not required to monitor for ~~volatile organic chemicals~~ the VOCs listed in R18-4-211.

B. A CWS or NTNCWS shall conduct initial monitoring for ~~volatile organic chemicals during the compliance period that begins on January 1, 1993;~~ VOCs in the monitoring year designated by the Department within the initial compliance period, except that a CWS or NTNCWS shall monitor for vinyl chloride only as prescribed in R18-4-213.

~~1. A CWS and NTNCWS shall conduct monitoring for vinyl chloride only as prescribed in R18-4-213; and~~

~~2. Each CWS and NTNCWS with less than 150 service connections shall conduct monitoring for dichloromethane, 1,2,4-trichlorobenzene, and 1,1,2-trichloroethane in the compliance period which begins January 1, 1996.~~

*ADEQ amended subsection B to clarify that it refers to initial monitoring for VOCs. ADEQ repealed obsolete references to initial compliance periods that have expired. The initial compliance period for VOC monitoring expired on December 31, 1996. The initial compliance period referenced in (B)(2) for CWS and NTNCWS with less than 150 service connections expires December 31, 1998. ADEQ designated initial monitoring years for these systems and the rule deadline is no longer necessary. Also, ADEQ amended the proposed rule to clarify that a public water system does not conduct routine monitoring for vinyl chloride. Under R18-4-213, monitoring for vinyl chloride is required only if a public water system detects certain specified VOCs.*

C. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels~~ MCLs for volatile organic chemicals at each sampling point as prescribed in R18-4-218.

*Subsections D and E: No change*

~~F. The Department may accept monitoring data which was collected after January 1, 1988 and prior to January 1, 1993 to satisfy initial monitoring requirements for a volatile organic chemical listed in R18-4-211 (i.e., a single sample rather than four consecutive quarterly samples). A CWS or NTNCWS which uses grandfathered monitoring data and which did not detect any volatile organic chemical listed in R18-4-211 at a sampling point shall take 1 sample annually at that sampling point in the initial compliance~~

~~period which begins January 1, 1993:~~

*ADEQ deleted subsection (F) because it is no longer necessary. Subsection (F) authorizes the use of grandfathered monitoring data for initial monitoring years in the compliance period that began on January 1, 1993 and ended on December 31, 1996. Subsection (F) has no application to subsequent compliance periods and is now obsolete.*

~~G.F. If a volatile organic chemical is not detected at a groundwater or surface water sampling point. If the concentration of a VOC in 4 consecutive quarterly samples during the initial compliance period is < 0.0005 mg/L, then a CWS or NTNCWS shall take 1 sample annually at that groundwater or surface water sampling point in repeat compliance periods. After The Department may further reduce monitoring frequency at a groundwater sampling point to 1 sample every 3 years if, after a minimum of 3 years of sampling at the groundwater sampling point (including the 4 consecutive quarterly samples taken during the initial compliance period) with no detections of a volatile organic chemical at a groundwater sampling point the Department may reduce monitoring frequency for that volatile organic chemical at that groundwater sampling point to 1 sample every 3 years the Department finds that the concentration of the VOC in each annual sample is < 0.0005 mg/L. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually. The Department's decision to allow reduced monitoring at a sampling point shall be in writing.~~

*ADEQ added language to clarify that detection of a volatile organic chemical is defined as 0.0005 mg/L, the applicable reporting limit for VOCs. The rule ties reduced monitoring for VOCs to that numeric concentration.*

*ADEQ revised the rule to clarify that monitoring frequency at a groundwater sampling point may be further reduced to once every three years.*

~~H.G. If a volatile organic chemical is detected at a sampling point in a concentration which is greater than or equal to If the concentration of a VOC in a sample is  $\geq$  0.0005 mg/L, then a CWS or NTNCWS shall sample quarterly for the ~~volatile organic chemical~~ VOC at that sampling point, beginning in the quarter immediately following collection of the sample in which the volatile organic chemical was detected that was  $\geq$  0.0005 mg/L. A CWS or NTNCWS shall continue quarterly monitoring at the sampling point until:~~

1. For a groundwater sampling point, a minimum of 2 consecutive quarterly samples are taken (which may include

the initial detection) and the concentration of the ~~volatile organic chemical~~ VOC in each sample is below the ~~maximum contaminant level~~ MCL. If the concentration of the ~~volatile organic chemical is below the maximum contaminant level~~ VOC is less than the MCL for a minimum of 2 consecutive quarterly samples, ~~then~~ the Department may reduce monitoring frequency at the groundwater sampling point from quarterly to annually. If the Department reduces monitoring frequency ~~to annually~~, ~~then a~~ the CWS or NTNCWS shall take the annual sample during the quarter ~~which that~~ previously yielded the highest analytical result. If the concentration of the ~~volatile organic chemical is below~~ VOC is < 0.0005 mg/L for 3 consecutive annual samples, ~~then~~ a CWS or NTNCWS may request that the Department further reduce monitoring frequency to once every 3 years or ~~the CWS or NTNCWS may~~ apply for a monitoring waiver.

2. For a surface water sampling point, a minimum of 4 consecutive quarterly samples are taken (which may include the initial detection) and the concentration of the ~~volatile organic chemical~~ VOC in each sample is ~~below the maximum contaminant level~~ less than the MCL. If the concentration of the ~~volatile organic chemical is below the maximum contaminant level~~ VOC is less than the MCL for a minimum of 4 consecutive quarterly samples, ~~then~~ the Department may reduce monitoring frequency at the surface water sampling point from quarterly to annually. If the Department reduces monitoring frequency ~~to annually~~, ~~then a~~ the CWS or NTNCWS shall take the annual sample during the quarter ~~which that~~ previously yielded the highest analytical result. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually.

~~f.H.~~ The Department may require increased monitoring for a ~~volatile organic chemical where~~ VOC if necessary to detect variations in a CWS or NTNCWS. A Department decision to require increased monitoring shall be in writing.

~~f.I.~~ ~~Compliance with the maximum contaminant level~~ The Department shall determine compliance with the MCL for a ~~volatile organic chemical shall be determined~~ VOC based upon the analytical results obtained at each sampling point.

1. For a CWS or NTNCWS ~~which that~~ samples quarterly or more frequently, ~~compliance shall be determined~~ the Department shall determine compliance by the running annual average of samples

taken at each sampling point. If the running annual average at any sampling point is greater than the ~~maximum contaminant level MCL~~, ~~then~~ the system is out of compliance. If any quarterly sample ~~would cause~~ causes the running annual average to ~~be exceeded~~ exceed the MCL, ~~then~~ the system is immediately out of compliance ~~immediately~~.

2. If a CWS or NTNCWS samples on an annual or less frequent basis, the system is out of compliance if the concentration of a ~~volatile organic chemical VOC~~ in a single sample exceeds the ~~maximum contaminant level MCL~~.
3. A CWS or NTNCWS that is ~~determined to be~~ out of compliance with a ~~maximum contaminant level MCL~~ for a ~~volatile organic chemical VOC~~ at a groundwater or surface water sampling point shall take ~~a minimum of at least~~ 4 consecutive quarterly samples at that sampling point. The CWS or NTNCWS shall continue quarterly monitoring until the running annual average is below the ~~maximum contaminant level MCL~~. If the running annual average is below the ~~maximum contaminant level MCL~~, ~~then~~ the Department may reduce monitoring frequency at the groundwater or surface water sampling point from quarterly to annually. If the Department reduces monitoring frequency to annually, ~~then~~ a CWS or NTNCWS shall take the annual sample during the quarter ~~which that~~ previously yielded the highest analytical result. If the concentration of the ~~volatile organic chemical VOC~~ at a groundwater sampling point is below the ~~maximum contaminant level MCL~~ for 3 consecutive annual samples, ~~then~~ a CWS or NTNCWS may request that the Department further reduce monitoring frequency at that groundwater sampling point to once every 3 years. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually.
4. ~~If a confirmation sample is required by the Department~~ If the Department requires a confirmation sample, the analytical result ~~must shall~~ be averaged with the initial analytical result and the average used in the compliance determination as specified in subsection ~~(F)(1)~~ (1) or (2). ~~The Department may delete results of obvious sampling errors from this calculation.~~

*ADEQ deleted the last sentence in subsection (I)(4) because it is unnecessary to state that the Department may delete analytical results where there is obvious sampling error. Also, the sentence raises sample*

*invalidation issues which the drinking water rules do not currently address. ADEQ needs to have a broader public discussion of sample invalidation issues before the subject matter is addressed in a rule.*

~~K.J.~~ The Department may require a confirmation sample for positive or negative results.

~~E.K.~~ A CWS or NTNCWS ~~which that~~ does not detect a ~~volatile organic chemical VOC~~ at a sampling point in a concentration ~~greater than or equal to that is \$~~ 0.0005 mg/l ~~after completing during~~ initial monitoring may submit a written request to the Department for a waiver from repeat monitoring requirements ~~at that sampling point~~. A CWS or NTNCWS may not obtain a waiver from initial monitoring requirements. ~~The Department may grant a monitoring waiver provided the CWS or NTNCWS is determined to be nonvulnerable, based upon a vulnerability assessment.~~ A monitoring waiver for a groundwater sampling point shall be effective for a term not to exceed 6 years. A monitoring waiver for a surface water sampling point shall be effective for a 3-year term. The Department's decision to grant or deny a request for a monitoring waiver shall be in writing. The Department may grant a ~~use or susceptibility monitoring~~ waiver ~~after evaluating the following factors as follows:~~

1. ~~Knowledge of previous use (including transport, storage, or disposal) of the volatile organic chemical within the watershed or zone of influence of the system. If the Department determines that there has been no previous use of the volatile organic chemical within the watershed or zone of influence, a use waiver may be granted~~ Use waiver: The Department may grant a use waiver if the Department determines that there has been no previous use of the VOC (including transport, storage, or disposal) within the watershed or zone of influence of a well.
2. ~~Susceptibility waiver: If previous use of the volatile organic chemical VOC is unknown or if it has been used previously, then the following factors shall be used to determine whether a susceptibility waiver is granted~~ the Department may grant a susceptibility waiver based upon a vulnerability assessment. The Department shall consider the following factors in deciding whether to grant or deny a susceptibility waiver:
  - a. Previous analytical results,
  - b. The proximity of the CWS or NTNCWS to a potential point or nonpoint source of contamination. ~~Point sources include spills or leaks of chemicals at or near a water~~

~~treatment plant or distribution system pipelines; or at manufacturing, distribution or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. A point source of contamination includes a spill or leak of a chemical at or near a water treatment plant or distribution system pipeline, at a manufacturing, distribution or storage facility, or from a hazardous or municipal waste landfill or other waste handling or treatment facility.~~

- c. The environmental persistence and transport of the ~~volatile organic chemical; VOC,~~
  - d. The number of persons served by the CWS or NTNCWS and the proximity of a smaller system to a larger system, and
  - e. How well the water source is protected against contamination. ~~Groundwater systems. The Department shall consider factors such as the depth of the well, the type of soil, and wellhead protection for a groundwater system and watershed protection for a surface water system. Surface water systems shall consider watershed protection.~~
3. As a condition of a monitoring waiver for a groundwater sampling point, a CWS or NTNCWS shall take 1 sample at the groundwater sampling point during the time the waiver is effective (i.e., 1 sample every 6 years). A CWS or NTNCWS ~~also~~ shall update its vulnerability assessment during the term of the waiver, considering the factors listed in subsection ~~(L)~~ (K)(2) above. The Department may renew a waiver based upon an updated vulnerability assessment provided the assessment reconfirms that the CWS or NTNCWS is ~~nonvulnerable~~ not vulnerable to VOC contamination. If the Department does not reconfirm nonvulnerability within 3 years of the initial determination, ~~then~~ the waiver ~~is invalidated~~ automatically terminates and the CWS or NTNCWS ~~is required to~~ shall sample annually at the groundwater sampling point in the next compliance period.
4. A CWS or NTNCWS ~~which that~~ receives a monitoring waiver for a surface water sampling point shall sample at the frequency specified by the Department (if any). A CWS or NTNCWS shall update its vulnerability assessment during each compliance period. The Department may renew a waiver based upon an updated vulnerability assessment provided the assessment reconfirms that the CWS or NTNCWS is ~~nonvulnerable~~ not vulnerable to VOC contamination. If the Department does

not reconfirm nonvulnerability, ~~then~~ the waiver ~~is invalidated~~ automatically terminates and a CWS or NTNCWS ~~is required to shall~~ sample annually at the surface water sampling point in the next compliance period.

*ADEQ added language to subsection (K) to clarify that monitoring waivers for VOCs are granted for specific sampling points. ADEQ also revised this subsection in response to comments from the Governor's Regulatory Review Council. ADEQ revised the subsection to clarify the difference between use and susceptibility waivers.*

**R18-4-213. Vinyl Chloride; Monitoring Requirements**

- A. ~~A community water system [CWS] or a nontransient, noncommunity water system [NTNCWS] which A CWS or NTNCWS that~~ detects trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene at a groundwater sampling point shall monitor quarterly for vinyl chloride at that sampling point. If vinyl chloride is not detected in the first quarterly sample, ~~then~~ the Department may reduce the quarterly monitoring frequency for vinyl chloride to one sample during each compliance period. The Department's decision to reduce monitoring frequency for vinyl chloride shall be in writing.
- B. A CWS or NTNCWS ~~which that~~ detects one of the ~~volatile organic chemicals~~ VOCs listed in subsection(A) at a surface water sampling point shall monitor for vinyl chloride at a frequency specified by the Department.
- ~~C. A water supplier shall not composite samples for vinyl chloride.~~

*ADEQ deleted subsection C because the prohibition against compositing vinyl chloride samples is addressed at R18-4-219(E)(3). Subsection C is unnecessary.*

**R18-4-215. Synthetic Organic Chemicals: MCLs**

Water distributed by a ~~community water system or nontransient, noncommunity water system~~ CWS or NTNCWS shall not exceed the following ~~maximum contaminant levels~~ MCLs for ~~synthetic organic chemicals~~ SOCs:

<u>Contaminant</u>	<u>MCL (mg/L)</u>
Alachlor	0.002
Atrazine	0.003

Benzo(a)pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
2,4-D	0.07
Dalapon	0.2
Dibromochloropropane (DBCP)	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexyl)phthalate	0.006
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide (EDB)	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs) (as decachlorobiphenyl)	0.0005
Simazine	0.004
2,3,7,8-TCDD (Dioxin)	$3 \times 10^{-8}$

Toxaphene	0.003
2,4,5-TP (Silvex)	0.05

**R18-4-216. Synthetic Organic Chemicals; Monitoring Requirements**

- A. Each ~~community water system [CWS] and nontransient, noncommunity water system [NTNCWS]~~ CWS and NTNCWS shall ~~conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels- MCLs~~ for ~~synthetic organic chemicals~~ the SOCs listed in R18-4-215. ~~Transient, noncommunity water systems are not required to monitor for synthetic organic chemicals~~ A TNCWS is not required to monitor for SOCs.
- B. A CWS or NTNCWS shall conduct initial monitoring for ~~synthetic organic chemicals~~ SOCs in the monitoring year designated by the Department ~~according to the following schedule:~~ within the initial compliance period.
- ~~1. A CWS or NTNCWS with 150 or more service connections shall conduct initial monitoring to determine compliance with the maximum contaminant levels for all of the synthetic organic chemicals listed in R18-4-215 in the compliance period which begins January 1, 1993.~~
  - ~~2. A CWS or NTNCWS with less than 150 service connections shall conduct initial monitoring to determine compliance with the maximum contaminant levels for alachlor, atrazine, carbofuran, chlordane, 2,4-D, dibromochloropropane (DBCP), ethylene dibromide (EDB), heptachlor, heptachlor epoxide, lindane, methoxychlor, PCBs, pentachlorophenol, toxaphene, and 2,4,5-TP (Silvex) in the compliance period which begins January 1, 1993.~~
  - ~~3. A CWS or NTNCWS with less than 150 service connections shall conduct initial monitoring to determine compliance with the maximum contaminant levels for benzo(a)pyrene, dalapon, di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, dinoseb, diquat, endothall, endrin, glyphosate, hexachlorobenzene, hexachlorocyclopentadiene, oxamyl, picloram, simazine, and 2,3,7,8-TCDD (dioxin) in the compliance period that begins January 1, 1996.~~

*ADEQ repealed the schedule for initial monitoring of the SOCs because it is no longer necessary. The compliance periods referenced in the schedule have been completed. ADEQ has already designated the initial monitoring*

years for existing public water systems that are affected by the rule. The compliance periods referenced in (B)(1) and (2) that began on January 1, 1993 ended on December 31, 1995. All public water systems with more than 150 service connections are required to have completed initial monitoring for SOCs in their designated monitoring years during the 1993-1996 compliance period. Public water systems with less than 150 service connections should have completed initial monitoring for the SOCs listed in subsection (B)(2) in the same compliance period. Public water systems with less than 150 service connections are required to complete initial monitoring for the SOCs listed in subsection (B)(3) by December 31, 1998. ADEQ has designated initial monitoring years for all of these small systems.

- C. Each CWS and NTNCWS shall ~~conduct monitoring to determine compliance with the maximum contaminant levels for synthetic organic chemicals~~ monitor for SOCs at each sampling point as prescribed in R18-4-218.
- D. A water supplier may composite SOC samples ~~for synthetic organic chemicals~~ as prescribed in R18-4-219.
- E. Each CWS and NTNCWS shall take ~~4~~ four consecutive quarterly samples at each sampling point during each compliance period. If no synthetic organic chemicals are detected at a sampling point during the initial compliance period, then the Department may reduce monitoring frequency in repeat compliance periods pursuant to subsection (G) below. The Department's decision to reduce monitoring frequency shall be in writing.

*The Governor's Regulatory Review Council did not approve the language of subsection (E) that ADEQ adopted. The Council's action disapproving the adopted rule language of subsection (E) results in the reinstatement of the language of subsection (E) from the current rule [effective April 28, 1995].*

- F. A CWS or NTNCWS may use SOC monitoring data collected ~~after January 1, 1990, and prior to January 1, 1993 in the three years immediately prior to the initial monitoring year~~ to satisfy initial monitoring requirements ~~for the initial compliance period provided the data are generally consistent with the requirements of this Section.~~

*ADEQ amended subsection F to clarify that a public water system may use grandfathered monitoring data to satisfy initial monitoring requirements at a sampling point. ADEQ deleted obsolete references to the three-year period prior to the initial compliance period that began on January 1, 1993 and ended on December 31, 1996.*

- G. If a CWS or NTNCWS does not detect a ~~synthetic organic chemical~~ SOC at a sampling point in the initial compliance period, the Department may reduce monitoring frequency at that sampling point in repeat compliance periods as follows:
1. For a CWS or NTNCWS ~~which that~~ serves more than 3,300 persons, the Department may reduce monitoring frequency to a minimum of 2 quarterly samples in 1 year at each sampling point during each repeat compliance period. Quarterly samples shall not be taken in consecutive quarters.
  2. For a CWS or NTNCWS ~~which that~~ serves 3,300 or fewer persons, the Department may reduce monitoring frequency to a minimum of one 1 sample at each sampling point during each repeat compliance period.
- H. If a CWS or NTNCWS detects a synthetic organic chemical listed in R18-4-215 (except atrazine, dibromochloropropane, ethylene dibromide and di(2-ethylhexyl)phthalate at a sampling point in a concentration that is greater than or equal to 50% of the maximum contaminant level for that synthetic organic chemical, then the system shall conduct quarterly monitoring for that synthetic organic chemical at that sampling point, beginning in the quarter immediately following collection of the sample where the synthetic organic chemical was detected. If a CWS or NTNCWS detects atrazine, dibromochloropropane, ethylene dibromide, or di(2-ethylhexyl)phthalate at a sampling point in a concentration that is greater than the maximum contaminant level, then the CWS or NTNCWS shall conduct quarterly monitoring for that contaminant. The CWS or NTNCWS shall continue quarterly monitoring at the sampling point until:
1. For groundwater sampling points, a minimum of ~~2~~ two consecutive quarterly samples are taken and the concentration of the synthetic organic chemical in each sample is below the maximum contaminant level. If the initial detection which triggers quarterly monitoring is at a concentration which exceeds the maximum contaminant level for a synthetic organic chemical, then a groundwater system shall take a minimum of ~~4~~ four consecutive quarterly samples at the sampling point the concentration of the synthetic organic chemical in each sample is below the maximum contaminant level.
  2. For surface water sampling points, a minimum of ~~4~~ four consecutive quarterly samples are taken and the concentration of the synthetic organic chemical in each sample is below the maximum

contaminant level.

3. If the concentration of a synthetic organic chemical is below the maximum contaminant level for the minimum number of consecutive quarterly samples prescribed in subsections (H)(1) or (H)(2) above, then the Department may reduce monitoring frequency at the sampling point from quarterly to annually. The Department's decision to reduce monitoring frequency from quarterly to annually shall be in writing. If the Department reduces monitoring frequency to annually, a CWS or NTNCWS shall take the annual sample during the quarter which previously yielded the highest analytical result. A CWS or NTNCWS which has ~~3~~ three consecutive annual samples with no detections of a synthetic organic chemical may submit a written request to the Department for a monitoring waiver according to subsection (M) below.

*On May 5, 1998, the Governor's Regulatory Review Council took action on ADEQ's adopted rule package, approving all of the rules except proposed amendments to subsection (H). GRRC did not approve the rule on the ground that the trigger level for increased SOC monitoring conflicted with federal law. The GRRC action resulted in the reinstatement of the language of subsection (H) from the current rule [effective April 28, 1995].*

- I. The Department may increase monitoring frequency, where necessary, to detect variations within a CWS or NTNCWS [e.g., fluctuations in concentration due to seasonal use, changes in water source]. The Department's decision to increase monitoring frequency shall be in writing.
- J. If monitoring results in the detection of either heptachlor or heptachlor epoxide, ~~then~~ subsequent monitoring shall analyze for both ~~synthetic organic chemicals~~ SOCs.
- K. ~~Compliance with the maximum contaminant level for a synthetic organic chemical shall be determined based upon the analytical results from each sampling point. The Department shall determine compliance with the MCL for a SOC from the analytical results from each sampling point as follows:~~
  1. For a CWS or NTNCWS ~~which that~~ samples quarterly or more frequently at a sampling point, ~~compliance is determined by the Department shall determine compliance from~~ the running annual average of all samples taken at ~~each the~~ sampling point. If the running annual average is greater than the ~~maximum contaminant level MCL~~, ~~then~~ the system is out of compliance. If any sample ~~would cause~~ causes the running annual average to ~~be exceeded~~ exceed the MCL, ~~then~~ the system is

out of compliance immediately. Any sample below the detection reporting limit shall be calculated as zero for purposes of determining the running annual average.

2. If a CWS or NTNCWS samples on an annual or less frequent basis at a sampling point, ~~then~~ the system is out of compliance if the concentration of a ~~synthetic organic chemical~~ SOC in a single sample exceeds the ~~maximum contaminant level~~ MCL.

L. The Department may require a confirmation sample. If the Department requires a confirmation sample, ~~then~~ the analytical ~~results~~ result from the confirmation sample shall be averaged with the analytical ~~results~~ result from the initial sample. The ~~average shall be used for determining compliance~~ Department shall use the average to determine compliance under subsection (K)(2).

M. A CWS or NTNCWS may submit a written request to the Department for a waiver from the monitoring requirements for a ~~synthetic organic chemical~~ SOC. A monitoring waiver is effective for ~~one~~ 1 compliance period ~~(i.e., three years)~~. The Department's decision to grant a monitoring waiver shall be in writing. A CWS or NTNCWS shall reapply for a monitoring waiver in each subsequent compliance period. A CWS or NTNCWS ~~which that~~ receives a monitoring waiver is not required to monitor for a ~~synthetic organic chemical~~ the SOC during the term of the waiver. The Department may grant a monitoring waiver as follows:

1. Use waivers: The Department may grant a use waiver ~~based upon knowledge of previous use (including transport, storage, or disposal of the synthetic organic chemical within the watershed or zone of influence of the CWS or NTNCWS. If the Department determines that there has been no previous use of a synthetic organic chemical, a waiver may be granted. if the Department determines that there has been no previous use of the SOC (including transport, storage, or disposal) within the watershed or zone of influence of a well.~~ If previous use of the ~~synthetic organic chemical~~ SOC is unknown or if the ~~synthetic organic chemical~~ SOC has been used previously, ~~then a waiver may be granted~~ the Department may grant a susceptibility waiver based upon a vulnerability assessment.
2. ~~Monitoring waiver based upon vulnerability assessment~~ Susceptibility waiver: The Department may grant a ~~monitoring waiver because a CWS or NTNCWS is determined to be nonvulnerable;~~ susceptibility waiver based upon the results of a vulnerability assessment. The Department shall

consider the following factors in ~~making the waiver determination~~ deciding whether to grant or deny a susceptibility waiver:

- a. Previous analytical results,
- b. The proximity of the CWS or NTNCWS to a potential point source or nonpoint source of contamination. ~~Point sources include spills and leaks of synthetic organic chemicals at or near a water treatment plant or distribution system, or at a manufacturing, distribution or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Nonpoint sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, homes, and gardens, and other land application uses; A point source of contamination includes a spill or leak of a SOC at or near a water treatment plant or distribution system pipeline, or at a manufacturing, distribution, or storage facility, or from a hazardous or municipal waste landfill, or from another waste handling or treatment facility. A nonpoint source includes the use of pesticides to control insect and weed pests on an agricultural area, forest, home, garden, or other land application use,~~
- c. The environmental persistence and transport of the ~~synthetic organic chemical~~ SOC,
- d. How well the water source is protected against contamination by ~~synthetic organic chemicals~~ the SOC due to such factors as geology and well design (e.g., depth to groundwater, type of soil and the integrity of the well casing),
- e. Elevated nitrate levels at the water supply source,
- f. Use of PCBs in equipment used in the production, storage, or distribution of water, and
- g. Wellhead protection assessments.

N. Each CWS or NTNCWS ~~which that~~ monitors for PCBs shall analyze each sample using either EPA Method 505 or EPA Method 508. If PCBs are not detected (as one of seven Aroclors) in the sample in concentrations which exceed the reporting limits below in any sample, then the public water system the CWS or NTNCWS shall be deemed to be is in compliance with the ~~maximum contaminant level~~ MCL for PCBs. ~~If PCBs are detected a PCB is detected~~ (as one of seven Aroclors) in any sample in a concentration that

~~exceeds the reporting limit for the Aroclor listed below, then~~ the sample shall be reanalyzed using EPA Method 508(A) to quantitate PCBs as decachlorobiphenyl. ~~Compliance with the maximum contaminant level for PCBs shall be based upon the analytical results of analyses using EPA Method 508(A). The Department shall determine compliance with the MCL for PCBs [as decachlorobiphenyl] from the EPA Method 508(A) analytical result.~~

<u>Aroclor</u>	<u>Reporting limit (mg/l)</u>
<u>1016</u>	<u>0.00008</u>
<u>1221</u>	<u>0.02</u>
<u>1232</u>	<u>0.0005</u>
<u>1242</u>	<u>0.0003</u>
<u>1248</u>	<u>0.0001</u>
<u>1254</u>	<u>0.0001</u>
<u>1260</u>	<u>0.0002</u>

*Since ADEQ repealed the detection limits that were found in Appendix B of the proposed rules, ADEQ added language to subsection (N) to list the Aroclors and the reporting limits for PCBs .*

#### **R18-4-217. Radiochemicals: MCLs and Monitoring Requirements**

- A. Water distributed by a ~~community water system [CWS]~~ CWS shall not exceed the following ~~maximum contaminant levels~~ MCLs:
1. 5 pCi/l for combined radium-226 and radium-228,
  2. 15 pCi/l for gross alpha particle activity, including radium-226 but excluding radon and uranium, and
  3. The average annual concentration of ~~man-made beta particle and photon emitters~~ beta particle and photon radioactivity from man-made radionuclides shall not produce an annual dose equivalent to the total body or any internal organ ~~greater than~~ ≥ 4 millirem/year.
    - a. Except for Tritium and Strontium-90, the concentration of man-made ~~beta particle and photon emitters~~ radionuclides causing 4 millirem total body or organ dose equivalents

shall be calculated on the basis of a 2-liter per day drinking water intake using the 168-hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS Handbook 69, U.S. Department of Commerce, (as amended August, 1963 and no future editions), which is incorporated by reference and on file with the Office of the Secretary of State and the Department.

- b. The following average annual concentrations of Tritium and Strontium-90 are assumed to produce a total body or organ dose equivalent of 4 millirem per year:

<u>Radionuclide</u>	<u>Critical organ</u>	<u>pCi/L</u>
Tritium	Total body	20,000
Strontium-90	Bone marrow	8

- c. If 2 or more radionuclides are present, ~~then~~ the sum of their annual dose equivalents to the total body or to any internal organ shall not exceed 4 millirem/year.

B. A CWS shall monitor for gross alpha particle activity, radium-226, and radium-228 as follows:

1. A CWS shall monitor each sampling point as prescribed in R18-4-218 ~~for gross alpha particle activity, radium-226, and radium-228~~ once every 4 years. ~~Compliance shall be based on the analysis of an annual composite of 4 consecutive quarterly samples or the average of the analytical results of 4 samples obtained at quarterly intervals. A CWS shall take 4 consecutive quarterly samples at each sampling point for gross alpha particle radioactivity, radium-226, and radium-228 analysis.~~
2. ~~The Department shall determine compliance with the MCLs in subsections (A)(1) and (A)(2) from the analytical results of a composite sample composed of 4 consecutive quarterly samples or the average of the analytical results of 4 consecutive quarterly samples.~~
- 2.3. A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analyses provided that the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 % ( $1.65 s$  where  $s$  is the standard deviation of the net counting rate of the sample).

- a. If a gross alpha particle activity measurement exceeds 5 pCi/L, ~~then~~ the same ~~or an equivalent~~ sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds 3 pCi/L, ~~then~~ the same ~~or an equivalent~~ sample shall be analyzed for radium-228.
- b. If a gross alpha particle activity measurement exceeds 15 pCi/L, ~~then~~ the same sample shall be analyzed for uranium and the uranium result shall be subtracted from the gross alpha particle activity measurement to determine compliance with ~~R18-4-217(A)(2)~~ subsection (A)(2).
- c. In localities where radium-228 may be present in drinking water, the Department may require radium-226 and radium-228 analyses ~~when if~~ the gross alpha particle activity exceeds ~~two~~ 2 pCi/L.

~~3. The Department may order a CWS to conduct annual monitoring for gross alpha particle radioactivity, radium-226, or radium-228 at a sampling point if the concentration of radium-226 exceeds 3 pCi/L.~~

- C. If the ~~maximum contaminant level MCL~~ for gross alpha particle activity or combined radium-226 and radium-228 is exceeded, ~~then~~ the CWS shall ~~conduct quarterly monitoring~~ monitor quarterly at the sampling point until a monitoring schedule ~~which that~~ is a condition of a variance, exemption, compliance agreement, or enforcement action ~~has become is~~ effective or the annual average concentration no longer exceeds the ~~maximum contaminant level MCL~~ due to one or more of the following:
  1. Treatment,
  2. Removal of a source from service, or
  3. An approved blending plan.
- D. The Department may order a CWS to conduct more frequent monitoring for gross alpha particle activity, radium-226, or radium-228 if the Department determines one of the following:
  1. The CWS is in the vicinity of mining or other operations ~~which that~~ may contribute alpha particle radioactivity to either surface or groundwater sources of drinking water,
  2. There is possible radiochemical contamination of surface or groundwater sources of drinking water, ~~or~~

3. Changes in the distribution system or treatment process occur ~~which that~~ may increase the concentration of radioactivity in drinking water, or
  4. The Department may order a CWS to conduct annual monitoring for gross alpha particle radioactivity, radium-226, or radium-228 at a sampling point if the concentration of radium-226 exceeds 3 pCi/L.
- E. ~~A CWS~~ The Department may reduce monitoring for ~~radiochemicals~~ gross alpha particle radioactivity, radium-226, or radium-228 as follows:
1. ~~Analysis of a single sample may be substituted for the quarterly sampling procedure prescribed in R18-4-217(B) when~~ The Department may allow a CWS to substitute a single annual sample for the 4 consecutive quarterly samples prescribed in subsection (B) annual record establishes that the average annual concentration is less than half  $\frac{1}{2}$  the maximum contaminant levels MCLs prescribed in R18-4-217(A) subsection (A).
  2. ~~Monitoring to determine compliance with the maximum contaminant level for combined radium-226 and radium-228 need not include radium-228, except where required by the Department, provided that the radium-226 concentration is less than 3 pCi/L and the average annual concentration of radium-228 has been measured at least once using the quarterly monitoring procedure prescribed in R18-4-217(B). The Department may allow a CWS to stop monitoring for radium-228 if:~~
    - a. The CWS has monitored radium-228 at least once using the quarterly monitoring procedure prescribed in subsection (B), and
    - b. The radium-226 concentration is < 3 pCi/L.
- F. A CWS shall ~~conduct quarterly monitoring take 4 consecutive quarterly samples~~ as prescribed in ~~R18-4-217(B) subsection (B)~~ at the point-of-entry to the distribution system within 1 year of the introduction of a new water source.
- G. The Department may order a CWS ~~which that~~ uses 2 or more sources that are combined before the point-of-entry into the distribution system and ~~which that~~ have different concentrations of radioactivity to monitor each source and to monitor the blended water at the point-of-entry.

H. ~~A CWS shall shall conduct monitoring for man-made radioactivity as follows: A CWS that is a surface water system that serves more than 100,000 persons and any CWS that the Department finds subject to potential health risks from man-made radioactivity shall monitor for gross beta particle radioactivity, Tritium, and Strontium-90 as follows:~~

1. ~~A CWS that is a surface water system which serves more than 100,000 persons and such other CWS as the Department finds is subject to potential health risks from man-made radioactivity shall monitor to determine compliance with the maximum contaminant levels for manmade radioactivity prescribed in R18-4-217(A)(3). A CWS shall complete analysis of a composite of 4 consecutive quarterly samples. Compliance with the maximum contaminant levels for man-made radioactivity may be assumed without further analysis if the annual average concentration of gross beta particle activity is less than 50 pCi/L and if the annual average concentrations of Tritium and Strontium-90 are less than those listed in R18-4-217(A)(3), provided that, if both radionuclides are present, the sum of their annual dose equivalents to bone marrow shall not exceed 4 millirem/year. A CWS that is a surface water system that serves more than 100,000 persons shall monitor at each surface water sampling point as prescribed in R18-4-218. A CWS that the Department determines is subject to potential health risks from man-made radioactivity shall monitor at sampling points designated by the Department.~~
2. ~~A CWS shall take 4 consecutive quarterly samples at each sampling point for gross beta particle radioactivity, Tritium, and Strontium-90 analysis once every four years.~~
  - a. ~~If the average annual concentration of gross beta particle radioactivity < 50 pCi/L, the sample shall be analyzed to determine the concentrations of Tritium and Strontium-90. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average annual concentration of gross beta particle radioactivity is < 50 pCi/L, the average annual concentration of Tritium is < 20,000 pCi/L, the average annual concentration of Strontium-90 is < 8 pCi/L , and the sum of the annual dose equivalents for Tritium and Strontium-90 is less than 4 millirem / year.~~
  - a b. ~~If gross beta particle activity exceeds radioactivity > 50 pCi/L, an analysis of the sample~~

~~shall be performed~~ the sample shall be analyzed to identify the major radioactive constituents present and the appropriate internal organ and total body doses shall be calculated to determine compliance with ~~R18-4-217(A)(3)~~ subsection (A)(3).

~~b. A groundwater system shall be required to monitor for man-made radioactivity if the Department finds that there is possible man-made radioactive contamination or an increased level of such contamination.~~

~~2. A water supplier shall repeat the required monitoring for man-made radioactivity at 4-year intervals.~~

3. ~~The water supplier of a CWS which utilizes water that may be contaminated by effluents from nuclear facilities shall perform quarterly monitoring for gross beta particle and Iodine-131 radioactivity and annual monitoring for Strontium-90 and Tritium~~ A CWS that utilizes water that may be contaminated by effluent from a nuclear facility shall monitor for gross beta particle radioactivity, Iodine-131, Strontium-90, and Tritium as follows:

a. ~~Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of 3 monthly samples. If the gross beta particle activity in a sample exceeds 15 pCi/L, the same or an equivalent sample shall be analyzed for Strontium-89 and Cesium-134. If the gross beta particle activity exceeds 50 pCi/L, an analysis of the sample shall be performed to identify the major radioactive constituents present, and the appropriate internal organ and total body doses shall be calculated to determine compliance with the maximum contaminant levels prescribed in R18-4-217(A)(3). A CWS shall monitor monthly for gross beta particle radioactivity. Compliance shall be based upon the analysis a composite sample made up of 3 monthly samples or the average concentration of 3 monthly samples.~~

- i. If the concentration of gross beta particle radioactivity > 15 pCi/L, the same sample shall be analyzed for Strontium-89 and Cesium-134. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average concentration of gross beta particle radioactivity is < 50 pCi/L, the average concentration of Cesium-134 is < 80 pCi/L, the average concentration of Strontium-89 is < 80 pCi/L, and the sum of the annual dose equivalents for Strontium-89 and Cesium-134 is < 4 millirem / year.
  - ii. If the concentration of gross beta particle radioactivity > 50 pCi/L, the same sample shall be analyzed to identify the man-made radionuclides that are present. The internal organ and total body dose equivalents shall be calculated for the man-made radionuclides that are present to determine compliance with the MCL prescribed in subsection (A)(3).
- b. For Iodine-131, a composite of 5 consecutive daily samples shall be analyzed once each quarter. More frequent monitoring shall be conducted at a frequency specified by the Department if Iodine-131 is detected in the finished water. A CWS shall take a composite of 5 consecutive daily samples once each quarter for Iodine-131 analysis. If Iodine-131 is detected, the CWS shall conduct more frequent monitoring at a frequency designated by the Department. If the concentration of Iodine-131 in the composite sample is  $\geq 3$  pCi / L, the CWS is out of compliance.
- c. Annual monitoring for Strontium-90 and Tritium shall be conducted by means of the analysis of a composite of 4 consecutive quarterly samples or analysis of 4 quarterly samples. A CWS shall take 4 consecutive quarterly samples for Strontium-90 and Tritium analyses each year. Compliance shall be based upon the analysis of a composite sample or the annual average concentration of 4 consecutive quarterly samples. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in

subsection (A)(3) if the average annual concentration of Tritium is < 20,000 pCi/L, the average annual concentration of Strontium-90 is < 8 pCi/L, and the sum of the annual dose equivalents for Tritium and Strontium-90 is < than 4 millirem / year.

- d. The Department may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the water supplier provided the Department determines that such data are applicable to a community water system.
4. ~~If a maximum contaminant level for man-made radioactivity is violated, a CWS shall conduct monthly monitoring until the average concentration for 12 consecutive months no longer exceeds the maximum contaminant level or until a monitoring schedule, which is a condition to a variance, exemption, compliance agreement, or enforcement action, has become effective~~ A CWS that violates a MCL for man-made radioactivity shall monitor monthly until the average concentration for 12 consecutive months no longer exceeds the MCL or the Department specifies a monitoring schedule as a condition to a variance, exemption, compliance agreement, or enforcement action.
5. A CWS that is a surface water system ~~that is required to monitor for man-made radioactivity shall conduct monitoring shall monitor~~ at surface water points-of-entry. ~~A CWS that the Department determines~~ If the Department determines that a CWS is subject to potential health risk from man-made radioactivity ~~shall conduct monitoring the CWS shall monitor~~ at points-of-entry designated by the Department.

#### **R18-4-218. Sampling sites**

- A. A public water system shall ~~conduct monitoring monitor~~ to determine compliance with ~~maximum contaminant levels~~ MCLs at sampling points as follows:
  1. At each point-of-entry to the distribution system that is representative of water from each well after treatment; and
  2. At each point-of-entry to the distribution system that is representative of each surface water source after treatment or in the distribution system at a point located before the first service connection

~~which that~~ is representative of each surface water source after treatment.

- B. If a public water system draws water from more than one source and the sources are combined before distribution, the public water system shall sample at points-of-entry to the distribution system during periods of normal operating conditions.
- C. A public water system shall take each sample in subsequent monitoring periods at the same sampling point unless conditions make another sampling point more representative of water from each source after treatment. ~~If a sampling site is changed in a subsequent monitoring period, then the water supplier shall report the new sampling site to the Department and explain the reason for the change in location.~~
- D. A public water system shall sample for total coliforms at sampling sites ~~as~~ identified in a written site sampling plan ~~which that~~ is subject to Department review and approval.
- E. A CWS shall sample for total trihalomethanes at sampling points as prescribed in R18-4-214.

#### **R18-4-219. Sample compositing**

- A. A public water system ~~may reduce the total number of samples which must be analyzed to determine compliance with a maximum contaminant level by compositing. Composite samples from a maximum of 5 samples are allowed~~ may composite up to 5 samples provided that the detection limit of the method used for analysis is less than ~~one-fifth of the maximum contaminant level~~ 1/5 of the MCL for the contaminant.
- B. ~~Compositing of samples~~ Sample compositing shall be done by a licensed laboratory.
- C. A public water system may composite up to 5 samples from sampling sites within the same public water system. A public water system serving 3,300 or fewer persons may composite samples with samples taken from other public water systems serving 3,300 or fewer persons.
- D. A public water system shall take follow-up samples if any of the following occurs:
  - 1. Inorganic chemicals: If the concentration of an inorganic chemical in a composite sample is ~~greater than or equal to one-fifth of the maximum contaminant level~~ 1/5 the MCL, ~~then a public water system shall take~~ a follow-up sample ~~shall be taken~~ within 14 days at each sampling point included in the composite sample. The follow-up samples shall be analyzed for ~~any the~~ inorganic chemical ~~which exceeded one-fifth of the maximum contaminant level~~ that exceeded 1/5 of the

~~MCL in the composite sample.~~

2. ~~Volatile organic chemicals VOCs: If any volatile organic chemical in a composite sample is detected a VOC is detected in a composite sample~~ in a concentration  $\leq 0.0005$  mg/L, ~~then a follow-up sample shall be taken a public water system shall take a follow-up sample~~ within 14 days at each sampling point that was included in the composite sample. The follow-up samples shall be analyzed for the ~~volatile organic chemical VOC~~ that was detected in the composite sample ~~within 14 days of sample collection in a concentration  $\leq 0.0005$  mg/L.~~
3. ~~Synthetic organic chemicals SOC~~s: If a ~~synthetic organic chemical SOC is detected~~ in a composite sample ~~in a concentration that~~ exceeds the ~~detection reporting~~ limit for that ~~synthetic organic chemical SOC~~ prescribed in ~~Appendix B R18-4-104(U)(2)(c)~~, then a follow-up sample shall be taken and analyzed within 14 days from each sampling point included in the composite sample. The follow-up samples shall be analyzed for the ~~synthetic organic chemical SOC~~ that was detected in the composite sample ~~in a concentration that exceeded the reporting limit.~~
4. If ~~duplicates a duplicate~~ of the original sample ~~taken from each sampling point used that was included~~ in the composite sample ~~are is~~ available, ~~then~~ a public water system may use the ~~duplicates duplicate~~ instead of taking ~~a follow-up samples sample~~. ~~Duplicates The duplicate sample~~ shall be analyzed and the results reported to the Department within 14 days of ~~sample~~ collection.

*ADEQ amended paragraph (D)(3) which addresses composite sampling for synthetic organic chemicals and the requirements for follow-up sampling when an SOC is detected in a composite sample. The relevant National Primary Drinking Water Regulation, 40 CFR §141.24(h)(10)(i), states that if a synthetic organic chemical is detected in a composite sample, then follow-up samples must be taken at each sampling point included within the composite sample within 14 days. ADEQ amended paragraph (D)(3) to clarify that “detection” of a synthetic organic chemical relates to the reporting limits for synthetic organic chemicals that are prescribed in R18-4-104(U)(2)(c). ADEQ established the reporting limits for composite SOC samples at the federal method detection limits for SOC that are prescribed at 40 CFR §141.24(h)(18). This makes the state rule consistent with the National Primary Drinking Water Regulations which tie follow-up sampling to the detection of an SOC at the*

*method detection limit.*

E. Special compositing rules:

1. Compositing VOC samples prior to GC analysis:
  - a. Add 5 ml or equal larger amounts of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions shall be taken to maintain zero headspace in the syringe. If less than 5 samples are used for compositing, a proportionately smaller syringe may be used.
  - b. Samples shall be cooled at 4EC to minimize volatilization losses.
  - c. The composite sample shall be well mixed. A 5 ml aliquot shall be drawn from the composite sample for GC analysis.
  - d. Sample introduction, purging, and desorption steps shall be as prescribed in the approved analytical method.
2. Compositing samples prior to GC/MS analysis:
  - a. Inject 5 ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25 ml purging device using the sample introduction technique described in the approved method.
  - b. The total volume in the purging device shall be 25 ml.
  - c. Purge and desorb as prescribed in the approved method.
3. Vinyl chloride samples shall not be composited.
4. Samples ~~which that~~ are composited cannot be screened for PCBs using EPA Method 505 or EPA Method 508. Samples that are composited for PCB analysis ~~must shall~~ be analyzed using EPA Method 508A.
5. Tap water samples for lead and copper shall not be composited. Source water samples for lead may be composited provided the method detection ~~level prescribed in Appendix B limit~~ for the analytical method used is achieved. Source water samples for copper may be composited provided the method detection ~~level prescribed in Appendix B limit~~ for the analytical method used is achieved.

6. Toxaphene samples shall not be composited unless the analytical method has a method detection limit that is  $\leq$  0.0006 mg/L.

ADEQ added a special sample compositing rule for toxaphene because the method detection limit for toxaphene [0.001 mg/L] is at a higher concentration than 1/5 of the MCL for toxaphene. Under the sample compositing rule, samples cannot be composited if the method of analysis cannot achieve a detection limit that is less than 1/5 of the MCL for a contaminant. Since the method detection limit for toxaphene [0.001 mg/L] is greater than 1/5 of the MCL for toxaphene [0.0006 mg/L], toxaphene samples cannot be composited. Samples for toxaphene analysis cannot be composited unless the method of analysis that is used can detect toxaphene in concentrations below 0.0006 mg/L.

**R18-4-302. Filtration**

- A. A surface water system shall ~~provide treat water by~~ filtration.
- B. Conventional or direct filtration: The turbidity ~~level of samples~~ of filtered water ~~from a surface water system that uses conventional filtration or direct filtration~~ shall be ~~less than or equal to  $\leq$~~  0.5 NTU in at least 95% of the measurements taken each month. The turbidity ~~level of samples~~ of filtered water shall not exceed 5 NTUs.
- C. Slow sand filtration: The turbidity ~~level of samples~~ of filtered water ~~from a surface water system using slow sand filtration~~ shall be ~~less than or equal to  $\leq$~~  1 NTU in at least 95% of the measurements taken each month. The turbidity ~~level of samples~~ of filtered water shall not exceed 5 NTUs.
- D. Diatomaceous earth filtration: The turbidity ~~level of samples~~ of filtered water ~~from a surface water system using diatomaceous earth filtration~~ shall be ~~less than or equal to  $\leq$~~  1 NTU in at least 95% of the measurements taken each month. The turbidity ~~level of samples~~ of filtered water shall not exceed 5 NTUs.
- E. Other filtration technologies: A surface water system may use a filtration technology other than conventional filtration, direct filtration, slow sand filtration, or diatomaceous earth filtration if the water supplier demonstrates to the Department, through pilot plant studies or other means, that the filtration technology, in combination with disinfection, consistently achieves a 99.9% (3-log) removal and

inactivation of *Giardia lamblia* cysts and a 99.99% (4-log) removal and inactivation of viruses. The turbidity ~~level of samples~~ of filtered water ~~from a surface water system that uses a filtration technology other than conventional filtration, direct filtration, slow sand filtration or diatomaceous earth filtration~~ shall be ~~less than or equal to~~ # 1 NTU in at least 95% of the measurements taken each month. The turbidity ~~level of samples~~ of filtered water shall not exceed 5 NTUs.

F. ~~A surface water system shall monitor the turbidity of filtered water as follows:~~

~~1. Turbidity measurements shall be performed on samples of filtered water~~ Frequency of turbidity monitoring: A surface water system shall take a grab sample and measure the turbidity of filtered water at least once every 4 hours that a water treatment plant is operating ~~A surface water system may substitute continuous turbidity monitoring for grab sample monitoring provided continuous turbidity monitoring equipment is calibrated regularly or monitor turbidity continuously. If a surface water system continuously monitors the turbidity of filtered water, the water supplier shall calibrate its turbidity monitoring equipment regularly~~ in accordance with the manufacturer's specifications.

~~a. A surface water system may substitute continuous turbidity monitoring for grab sample monitoring provided continuous turbidity monitoring equipment is calibrated regularly in accordance with the manufacturer's specifications.~~

~~2. Filtered water turbidity shall be measured at one of the following locations:~~

G. Location of turbidity monitoring: A surface water system shall monitor the turbidity of filtered water at one of the following locations:

~~a.~~ 1. Combined filter effluent prior to entry into a clearwell,

~~b.~~ 2. Clearwell effluent,

~~c.~~ 3. Water treatment plant effluent, or

~~d.~~ 4. Another location that is approved by the Department.

H. Reduced turbidity monitoring: Upon the written request of a water supplier, the Department may reduce the frequency of grab sampling for turbidity if the Department determines that less frequent turbidity monitoring is sufficient to indicate effective filtration performance. A Department decision to reduce

turbidity monitoring shall be in writing. The Department may reduce turbidity monitoring as follows:

- ~~3.1. Upon the written request of a water supplier, the~~ The Department may reduce the frequency of grab sampling by a surface water system using slow sand filtration or a filtration technology other than conventional filtration, direct filtration, or diatomaceous earth filtration to once per day ~~if the Department determines that less frequent turbidity monitoring is sufficient to indicate effective filtration performance. The Department's decision to allow less frequent turbidity monitoring shall be in writing.~~
- ~~4.2. Upon the written request of a water supplier, the~~ The Department may reduce the frequency of grab sampling by a surface water system that serves 500 or fewer persons to once per day, regardless of the type of filtration used, ~~if the Department determines that less frequent turbidity monitoring is sufficient to indicate effective filtration performance. The Department's decision to allow less frequent turbidity monitoring shall be in writing.~~

**R18-4-303. Disinfection**

- A. A surface water system shall provide disinfection sufficient to ensure that the total treatment processes of the system achieve at least a 99.9 % (3-log) inactivation and removal of *Giardia lamblia* cysts and at least a 99.99 % (4-log) inactivation and removal of viruses.
- B. The residual disinfectant concentration in water entering the distribution system (measured as free

chlorine, combined chlorine, or chlorine dioxide) shall be not less than 0.2 mg/L for more than 4 consecutive hours.

1. A surface water system that serves more than 3,300 persons per day shall continuously monitor the residual disinfectant concentration in water entering the distribution system. If there is a failure of the continuous monitoring equipment, ~~then~~ a surface water system shall ~~conduct grab sampling~~ take grab samples every 4 hours to monitor residual disinfectant concentration. A surface water system shall repair or replace the continuous monitoring equipment within 5 days of initial failure.
2. A surface water system that serves 3,300 or fewer persons per day may take grab samples to monitor the residual disinfectant concentration in water entering the distribution system instead of continuous monitoring.

- a. ~~If grab samples are taken, a~~ The surface water system shall sample each day at the following frequency:

<u>System size by population</u>	<u>Number of grab samples / day<sup>1</sup></u>
500 or less	1
501 to 1,000	2
1,001 to 2,500	3
2,501 to 3,300	4

<sup>1</sup> Grab samples shall not be taken at the same time. Sampling intervals are subject to Department review and approval.

- b. If the residual disinfectant concentration in a grab sample is ~~below~~  $< 0.2$  mg/l, ~~then~~ a surface water system shall increase the frequency of grab sampling to once every 4 hours. The surface water system shall continue to take a grab sample every 4 hours until the residual disinfectant concentration in water entering the distribution system is ~~greater than or equal to~~  $\$ 0.2$  mg/L.

C. The residual disinfectant concentration of water in the distribution system (measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide) shall be detectable in 95% or more of the samples each month for any 2 consecutive months that a surface water system serves water to the public.

1. ~~Heterotrophic bacteria in the distribution system, as heterotrophic plate count (HPC), may be measured in lieu of~~ A surface water system may measure the concentration of heterotrophic bacteria in water in the distribution system as heterotrophic plate count (HPC) instead of measuring the residual disinfectant concentration in water in the distribution system. Water in the distribution system with a heterotrophic bacteria concentration that is ~~less than or equal to~~ # 500/ml (measured as HPC) is deemed to have a detectable residual disinfectant concentration.
2. ~~To~~ The water supplier shall calculate the value "V in the following formula to determine whether there is a detectable residual concentration in water in the distribution system in 95% of the samples taken each month, ~~the value "V" in the following formula shall be calculated.~~ The value "V" shall not exceed 5 in each month for any 2 consecutive months:

$$V = \frac{c+d/e}{d/b} \times 100$$

Where:

- a = Number of instances ~~where~~ the residual disinfectant concentration is measured;
  - b = Number of instances ~~where~~ the residual disinfectant concentration is not measured but HPC is measured;
  - c = Number of instances ~~where~~ the residual disinfectant concentration is measured but not detected and no HPC is measured;
  - d = Number of instances ~~where~~ no residual disinfectant concentration is detected and ~~where~~ the HPC is greater than 500/ml; and
  - e = Number of instances ~~where~~ the residual disinfectant concentration is not measured and HPC is greater than 500/ml.
3. The residual disinfectant concentration in water in the distribution system shall be measured at the

same sampling sites and at the same time as total coliform sampling.

- D. A water supplier shall submit a treatment technique compliance study to the Department ~~which that~~ demonstrates ~~that~~ the total treatment processes of the surface water system achieve the *Giardia lamblia* and virus removal and inactivation rates prescribed in ~~this~~ subsection (A). The water supplier shall submit an additional treatment technique compliance study if there is a change in the treatment process ~~which that~~ may affect the percent removal or inactivation of *Giardia lamblia* cysts or viruses or an additional or different source is developed.

**R18-4-307. Lead and Copper; Requirements for Small and Medium Water Systems**

- A. Except as provided in ~~R18-4-307(B) subsection (B)~~, a small ~~and or~~ medium water ~~systems~~ system shall complete the following treatment technique steps within the indicated time periods:
1. A small or medium water system shall conduct initial tap water monitoring for lead and copper for 2 consecutive 6-month monitoring periods or until the system exceeds a lead or copper action level.
  2. A small or medium water system that exceeds an action level for lead or copper shall ~~conduct~~ water quality parameter monitoring ~~monitor for water quality parameters~~ as prescribed in R18-4-311. A small or medium water system shall complete monitoring for water quality parameters in the same monitoring period ~~during which that~~ the system exceeds the action level ~~for lead or copper~~.
  3. A small or medium water system ~~which that~~ exceeds an action level for lead or copper shall recommend optimal corrosion control treatment to the Department within 6 months ~~of~~ ~~completion of~~ after the monitoring period ~~in which that~~ the system exceeded the action level ~~for lead or copper~~.
  4. Within a 1 year after ~~completion of~~ the monitoring period ~~in which that~~ a small or medium water system exceeded an action level for lead or copper, the Department shall determine whether ~~to~~ ~~require the small or medium water system to perform~~ a corrosion control study is necessary. If the Department requires a ~~small or medium water system to perform~~ a corrosion control study, ~~then~~

the ~~small or medium~~ system shall complete and submit the study to the Department within 18 months of the date ~~that~~ the Department determines that ~~a corrosion control study one~~ is necessary.

The Department shall designate the optimal corrosion control treatment for the small or medium water system within 6 months of ~~the date of submittal receipt~~ of the corrosion control study.

5. If the Department does not require a small or medium water system to perform a corrosion control study, the Department shall designate optimal corrosion control treatment for the system ~~within the following time-frames as follows:~~

a. For medium water systems, within 18 months after the system exceeds an action level ~~for lead or copper~~; or

b. For small water systems, within 24 months after the system exceeds an action level ~~for lead or copper.~~

6. A small or medium water system shall install optimal corrosion control treatment within 24 months after the Department designates optimal corrosion control treatment ~~for the system.~~

7. A small or medium water system shall complete follow-up tap water monitoring for lead and copper and follow-up monitoring for water quality parameters, as prescribed in R18-4-313, within 36 months after the Department designates optimal corrosion control treatment.

8. The Department shall designate water quality parameters for optimal corrosion control within 6 months of completion of follow-up monitoring.

9. A small or medium water system shall ~~operate in compliance comply~~ with the designated water quality parameters for optimal corrosion control and continue ~~to conduct~~ follow-up tap water monitoring for lead and copper and ~~follow-up monitoring~~ for water quality parameters as prescribed in R18-4-313.

B. A small or medium water system is deemed to have optimized corrosion control and is not required to complete the treatment technique steps identified in ~~R18-4-307(A)~~ subsection (A) if the small or medium water system satisfies one of the following criteria:

1. A small or medium water system does not exceed the action level for lead or copper ~~during each of~~ ~~for~~ 2 consecutive 6-month monitoring periods.

2. A small or medium water system demonstrates to the Department that it has conducted corrosion control activities that are equivalent to the corrosion control steps prescribed in subsection (A). The Department shall provide written notice to the small or medium water system ~~which that~~ explains the basis for ~~any equivalency determination its determination that the system's corrosion control steps are equivalent.~~ The Department shall designate the water quality parameters ~~which that~~ represent optimal corrosion control for the small or medium water system. A small or medium water system shall provide the following information to the Department to support a request for an equivalency determination:

a. The results of all samples collected for lead, copper, pH, alkalinity, calcium, conductivity, water temperature, orthophosphate [when an inhibitor containing a phosphate compound is used], and silicate [when an inhibitor containing a silicate compound is used] before and after evaluation of corrosion control treatment.

b. A report ~~which that~~ explains the test methods used by the small or medium water system to evaluate the effectiveness of each of the following corrosion control treatments:

1. Alkalinity and pH adjustment,
2. Calcium hardness adjustment, and
3. The addition of a phosphate or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

The report shall include the results of all tests conducted and the basis for the small or medium water system's selection of optimal corrosion control treatment;

c. A report ~~which that~~ explains how corrosion control treatment has been installed and how

it is being maintained to ensure minimal lead and copper concentrations at taps; and

- d. The results of tap water monitoring samples for lead and copper collected in accordance with requirements prescribed at R18-4-310. A small or medium water system shall conduct tap water monitoring for lead and copper once every 6 months for at least 1 year after corrosion control treatment has been installed.
3. A small or medium water system is deemed to have optimized corrosion control if the system submits the analytical results of tap water monitoring for lead and copper conducted in accordance with R18-4-310 and source water monitoring conducted in accordance with R18-4-314 ~~which~~ that demonstrate that for 2 consecutive 6-month monitoring periods, the difference between the 90th percentile tap water lead level, as computed according to R18-4-308, and the highest source water lead concentration is ~~less than~~  $\leq 0.005$  mg/L.
- C. ~~Any A~~ small or medium water system that is required to complete the corrosion control steps prescribed in R18-4-307(A) ~~because of an exceedance of an action level for lead or copper~~ may cease completing the steps whenever the system does not exceed the action level for lead or copper during each of 2 consecutive 6-month monitoring periods and submits the analytical results to the Department. If a small or medium water system ~~thereafter~~ subsequently exceeds an action level for lead or copper during ~~any a~~ monitoring period, the system (or the Department) shall recommence completion of the applicable corrosion control steps, beginning with the first step ~~which that~~ was not previously completed in its entirety. The Department may require a small or medium water system to repeat steps previously completed ~~by the system where if~~ the Department determines that repeating a step is necessary to implement properly the corrosion control requirements of this Section. The Department shall notify the small or medium water system in writing of ~~such a~~ the determination and explain the basis for its decision.
  - D. The requirement ~~for any that a~~ small or medium water system ~~to~~ implement corrosion control treatment steps if an action level for lead or copper is exceeded ~~includes applies to a~~ small ~~and or~~ medium water ~~systems~~ system ~~which are been deemed to have that has~~ optimized corrosion control treatment under R18-4-307(B)(1) and ~~which thereafter exceed that subsequently exceeds~~ an action level for lead or copper.

*The word, "been," in paragraph D was eliminated to correct the sentence.*

- E. A small or medium water system ~~which that~~ exceeds an action level for lead or copper shall conduct source water monitoring as prescribed in R18-4-314.
- F. A small or medium water system ~~which that~~ exceeds the action level for lead after implementation of corrosion control treatment or source water treatment shall comply with the lead service line replacement requirements prescribed in R18-4-315.
- G. A small or medium water system ~~which that~~ exceeds the action level for lead shall comply with the public education requirements for lead prescribed in R18-4-316.

**R18-4-310. Lead and Copper; Tap Water Monitoring**

- A. Each ~~large, medium, and small~~ public water system shall conduct tap water monitoring for lead and copper as follows:
  1. ~~Each A~~ large water system shall conduct initial tap water monitoring for lead and copper during 2 consecutive 6-month monitoring periods.
  2. ~~Each A~~ small ~~and or~~ medium water system shall conduct initial tap water monitoring for lead and copper during 2 consecutive 6-month monitoring periods. If a small or medium water system exceeds an action level for lead and copper in a monitoring period, ~~then~~ the system shall implement corrosion control treatment steps as prescribed in R18-4-307(A)(2-9).
- B. The ~~first six-month~~ initial 6-month monitoring period ~~for large, medium, and small water systems~~ shall begin on the following dates:

<u>System size by number of people served</u>	<u>First 6-month monitoring period begins on:</u>
> 50,000 [large water systems]	January 1, 1992
3,301 to 50,000 [medium water systems]	July 1, 1992
# 3,300 [small water systems]	July 1, 1993

- C. Each ~~large, medium, and small public~~ water system shall collect one tap water sample for lead and copper from the following number of sampling sites during each monitoring period:

<u>System size (by population)</u>	<u>Number of samples</u>
>100,000	100
10,001 to 100,000	60
3,301 to 10,000	40
501 to 3,300	20
101 to 500	10
# 100	5

- D. All tap water samples for lead and copper, with the exception of lead service line samples, shall be first-draw samples.

1. ~~Each A~~ first-draw tap water sample for lead and copper shall be 1 liter in volume and shall have stood motionless in the plumbing system of each sampling site for at least ~~six 6~~ hours. ~~First-draw samples A first-draw sample~~ from residential housing shall be collected from the cold-water kitchen tap or bathroom sink tap. ~~First-draw samples A first-draw sample~~ from a non-residential building shall be collected at an interior tap from which water is typically drawn for consumption. ~~First-draw samples A first-draw sample~~ may be collected by the ~~system water supplier~~ or the ~~system water supplier~~ may allow ~~residents a resident~~ to collect ~~first-draw samples a first-draw sample~~ after providing instructions to the resident on proper sampling procedures. If a ~~system water supplier~~ allows residents to perform sampling, the system may not challenge the accuracy of the sampling results based on alleged errors in sample collection.
2. Each lead service line sample shall be 1 liter in volume and shall have stood motionless in the lead service line for at least 6 hours. Lead service line samples shall be collected in one of the following ~~three~~ ways:
  - a. At a tap after flushing the volume of water between the tap and the lead service line. The volume of water that is flushed shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;

- b. Tapping directly into the lead service line; or
  - c. If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.
3. A water system shall collect each first-draw tap water sample in subsequent monitoring periods from the same sampling site ~~from which~~ it collected a previous sample. If a system cannot gain entry to a sampling site in order to collect a follow-up tap water sample, the system may collect the follow-up tap water sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria and is within reasonable proximity of the original sampling site.
- E. A small or medium water system ~~which that~~ does not exceed an action level for lead or copper in the initial 6-month monitoring period shall continue tap water monitoring for ~~another a~~ consecutive 6-month monitoring period. If the small or medium water system does not exceed the action level for lead and copper in 2 consecutive 6-month monitoring periods, ~~then~~ the system may make a written request to the Department to reduce the frequency of tap water monitoring ~~for lead and copper~~ to once per year. The small or medium water system also may request a reduction in the number of samples taken as prescribed in ~~R18-4-310(E)(1) below~~ subsection (E)(1).

1. A small or medium water system conducting reduced monitoring shall collect the following number of samples per year:

<u>System size (Number of persons served)</u>	<u>Number of samples</u>
10,001 - 50,000	30
3,301 - 10,000	20
501 - 3,300	10
101 - 500	5
# 100	5

2. A small or medium water system that does not exceed the action levels for lead and copper for 3 consecutive years of monitoring may submit a written request to the Department to further reduce the frequency of tap water monitoring for lead and copper to once every 3 years. A small or

medium water system ~~which that~~ samples annually or less frequently shall conduct tap water monitoring for lead and copper during the months of June, July, August, or September in the same calendar year.

3. A small or medium water system that reduces the frequency of monitoring and the number of samples taken shall collect samples from sites included in the pool of targeted sampling sites.
  4. If a small or medium water system that is subject to reduced monitoring exceeds an action level for lead or copper, ~~then~~ the system shall resume tap water monitoring at the frequency specified in ~~R18-4-310(A)~~ subsection (A) and collect the number of samples specified in ~~R18-4-310(C)~~ subsection (C).
- F. The ~~Department and the public water system shall consider the~~ results of tap water monitoring for lead and copper conducted by ~~systems~~ the system in addition to the minimum requirements of this Section ~~shall be considered by the system and the Department~~ in making any treatment technique determinations required by this Article.
- G. A small or medium water system ~~which that~~ exceeds an action level for lead or copper shall comply with the following:
1. Water quality parameter monitoring requirements prescribed at R18-4-311.
  2. Source water monitoring requirements prescribed at R18-4-314.
  3. ~~A small or medium water system which exceeds the action level for lead shall comply with the lead~~ Lead public education requirements prescribed at R18-4-316 if the system exceeds the action level for lead.
- H. A large water system ~~which that~~ exceeds an action level for lead or copper shall comply with the following:
1. Source water monitoring requirements prescribed at R18-4-314.
  2. ~~A large water system which exceeds the action level for lead shall comply with the lead~~ Lead public education requirements prescribed in R18-4-316 if the system exceeds the action level for lead.
  3. ~~A large water system which exceeds the action level for lead after installation of corrosion control treatment and source water treatment shall comply with the lead~~ Lead service line replacement

requirements prescribed in R18-4-315 if the system exceeds the action level for lead after installation of corrosion control treatment and source water treatment.

- I. A ~~large, medium, or small~~ public water system that exceeds the action level for lead shall offer to sample the tap water of any customer who requests it. The system is not required to pay for the collection or analysis of the sample. Any sample that is collected pursuant to this paragraph shall not be used for purposes of determining compliance.

**R18-4-311. Lead and Copper; ~~Monitoring for Water Quality Parameters~~ Water Quality Parameter Monitoring**

- A. ~~Each A~~ large water system shall ~~conduct monitoring~~ monitor for water quality parameters. ~~, regardless of whether an action level for lead or copper is exceeded.~~ ~~Each A~~ small ~~and or~~ medium water system shall ~~conduct monitoring~~ monitor for water quality parameters only if the system exceeds an action level for lead or copper. ~~Monitoring for water quality parameters~~ Water quality parameter monitoring includes both tap water monitoring and source water monitoring.

- B. ~~Each large, medium, or small water system that is required to conduct monitoring for water quality parameters shall collect samples for the following water quality parameters~~ A system that monitors for water quality parameters shall collect samples for the following parameters:

1. pH (at the time of sample collection);
2. Alkalinity;
3. Calcium;
4. Conductivity;
5. Water temperature (at the time of sample collection);
6. Orthophosphate (when a phosphate-based corrosion inhibitor is used);
7. Silica (when a silicate-based corrosion inhibitor is used).

- C. ~~Tap water samples for water quality parameters shall be~~ The water supplier shall take tap water samples that are representative of water quality throughout the distribution system taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and

seasonal variability. ~~Tap water samples for water quality parameters need not be taken from the same locations as tap water samples for lead and copper. Tap water samples for water quality parameters may be taken at the same sampling sites used for total coliform sampling. The water supplier may take tap water samples for water quality parameters at the same locations as tap water samples for lead and copper or at the same sampling sites used for total coliform sampling.~~ Source water samples for water quality parameters shall be taken. The water supplier shall take source water samples for water quality parameters at sampling points as prescribed in R18-4-218.

- D. Each ~~large, medium, and small water system~~ system that monitors for water quality parameters shall collect 2 tap water samples ~~for water quality parameters~~ during each ~~six-month~~ 6-month monitoring period from the following number of taps:

<u>System Size (number of people served)</u>	<u>Number of Sites</u>
> 100,000	25
10,001-100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
# 100	1

- E. Each ~~large, medium, and small water system~~ system that monitors for water quality parameters shall collect 2 source water samples ~~for water quality parameters~~ at each sampling point as prescribed in R18-4-218 during each monitoring period.
- F. Each large water system ~~is required to conduct initial monitoring~~ shall monitor for water quality parameters at taps and at each sampling point ~~during each of~~ for 2 consecutive 6-month monitoring periods. A small or medium-size water system shall ~~conduct monitoring~~ monitor for water quality parameters only if the system exceeds an action level for lead or copper. A small or medium water system shall complete tap water and source water monitoring for water quality parameters in the same monitoring period ~~during which~~ that the system exceeds an action level for lead or copper.
- G. ~~Based upon the results of tap water monitoring for lead and copper and monitoring for water quality~~

~~parameters, a~~ A small or medium water system ~~which that~~ exceeds an action level for lead or copper shall recommend installation of one or more of the corrosion control treatments listed in this subsection ~~which that~~ the small or medium water system believes constitutes optimal corrosion control. Each small or medium water system shall make a recommendation on an optimal corrosion control treatment to the Department within ~~six 6 months of completion of after~~ the monitoring period ~~during which that~~ the action level was exceeded. The Department may require that a small or medium water system conduct additional monitoring for water quality parameters to assist ~~the Department in reviewing the system the Department's review of the system's~~ recommendation on optimal corrosion control treatment. Optimal corrosion control treatments include:

1. Alkalinity and pH adjustment,
2. Calcium hardness adjustment, and
3. The addition of a phosphate or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

H. ~~Based upon available information, including a small or medium water system's recommendation on optimal corrosion control treatment, the~~ The Department shall, in writing, either approve the optimal corrosion control treatment recommended by the system, designate a different optimal corrosion control treatment for the system, or require that the small or medium water system conduct a corrosion control study to identify the optimal corrosion control treatment for the system. If the Department makes the determination that a corrosion control study is not necessary, ~~then~~ the Department shall designate the optimal corrosion control treatment for the system within the following time frames:

1. For medium water systems, within 18 months after the system exceeds the lead or copper action level, or
2. For small water systems, within 24 months after the system exceeds the lead or copper action level.

I. The Department and the system shall consider the results of ~~any additional~~ monitoring for water quality parameters conducted by a system in addition to the minimum requirements prescribed in this Section ~~shall be considered by the system and the Department~~ in making recommendations a recommendation regarding

optimal corrosion control treatment, performance of a corrosion control study, designation of optimal corrosion control treatment or water quality parameters for optimal corrosion control, or modification of an optimal corrosion control treatment decision.

**R18-4-314. Lead and Copper; Source Water Monitoring and Treatment**

- A. A ~~large, medium, or small public~~ water system ~~which that~~ exceeds an action level for lead or copper shall conduct source water monitoring for lead or copper.
- B. Source water monitoring for lead or copper shall be conducted at sampling points as prescribed in R18-4-218. A public water system may ~~reduce the total number of samples which must be analyzed by compositing as prescribed by composite samples in accordance with~~ R18-4-219.
- C. A ~~large, medium, or small water system which~~ public water system that exceeds an action level for lead or copper shall collect ~~one~~ 1 sample from each sampling point within 6 months ~~of completion of~~ after the monitoring period ~~in which there was an exceedance of that~~ the action level for lead or copper was exceeded.
- D. Within 6 months after the monitoring period ~~in which a large, medium, or small water system exceeds that~~ an action level for lead or copper was exceeded, the ~~system water supplier~~ shall make a written recommendation to the Department as to whether one of the source water treatments listed in ~~this~~ subsection (G) is necessary. The ~~system water supplier~~ may recommend that no source water treatment be installed ~~based upon a demonstration if the water supplier demonstrates~~ that source water treatment is not necessary to minimize lead or copper levels at taps.
- E. The Department shall ~~complete an evaluation of~~ evaluate the results of all source water samples submitted by a ~~large, medium, or small public~~ water system to determine ~~whether if~~ source water treatment is necessary to minimize lead or copper levels in water delivered to taps. The Department shall make a written determination ~~on whether regarding the necessity of~~ source water treatment ~~is necessary~~ within 6 months after submission of source water monitoring results.
- F. ~~Where If~~ the Department determines that a ~~large, medium, or small public~~ water system is not required to install source water treatment, the system shall conduct source water monitoring at one of the following

frequencies:

1. A ~~large, medium, or small water system that is a~~ groundwater system shall collect source water samples for lead or copper once during each compliance period, beginning in the compliance period that the Department determines that source water treatment is unnecessary.
  2. A ~~large, medium, or small water system that is a~~ surface water system shall collect source water samples for lead or copper annually. The first annual monitoring period shall begin on the date that the Department determines that source water treatment is unnecessary.
- G. If the Department requires installation of source water treatment, a ~~large, medium, or small public~~ water system shall install ~~the~~ treatment within 24 months of the date that the Department makes a determination that source water treatment is necessary. ~~Each A public water~~ system shall properly install and operate the source water treatment that is approved or designated by the Department. The Department shall either require installation and operation of the source water treatment recommended by the ~~system water supplier~~ or require the installation and operation of another source water treatment from among the following:
1. Ion exchange,
  2. Reverse osmosis,
  3. Lime softening, or
  4. Coagulation ~~and~~ filtration.
- H. The Department may request additional information from a ~~large, medium, or small public~~ water system to aid in its source water treatment determination. If ~~the Department requests~~ additional information ~~is requested, then~~ a water ~~system supplier~~ shall provide the information by the date specified by the Department in its request. The Department shall notify a ~~large, medium, or small public~~ water system, in writing, of its source water treatment determination and set forth the basis for its decision.
- I. A ~~large, medium, or small public~~ water system that ~~is required to install~~ installs source water treatment shall complete follow-up tap water and source water monitoring for lead and copper ~~and follow-up source water monitoring for lead and copper~~ within 36 months of the date that the Department determines that source water treatment is necessary.
- J. The Department shall review a ~~large, medium, or small public~~ water system's installation and operation of

source water treatment and designate maximum permissible levels for lead or copper within 6 months after the completion of follow-up monitoring. The Department shall review the source water samples taken by the system both before and after the system installs source water treatment to determine ~~whether if~~ the system has properly installed and operated the source water treatment designated by the Department. Based upon its review, the Department shall designate the maximum permissible levels for lead or copper ~~Such levels shall that~~ reflect the contaminant removal capability of the source water treatment when it is properly operated and maintained. The Department shall provide written notice to the system and explain the basis for its decision.

- K. ~~A large, medium, or small~~ public water system shall ~~operate in compliance~~ comply with the Department-designated maximum permissible levels for lead or copper and ~~shall~~ continue source water monitoring. A system shall monitor at the frequency specified below ~~in cases where~~ if the Department designates maximum permissible levels:
1. A groundwater system shall collect 1 sample from each sampling point once during each compliance period, beginning in the compliance period that the Department designates maximum permissible levels for lead or copper.
  2. A surface water system shall collect 1 sample annually from each sampling point. The first monitoring period shall begin on the date that the Department specifies maximum permissible levels for lead or copper.
- L. ~~Each large, medium, or small~~ A public water system shall maintain lead or copper levels below the maximum permissible levels designated by the Department at each sampling point. A system is out of compliance ~~with this paragraph~~ if the level of lead or copper at any sampling point is greater than the maximum permissible level designated by the Department.
- M. ~~A large, medium, or small~~ public water system is not required to conduct additional source water monitoring for lead or copper if the system does not exceed the action level for lead or copper during the entire source water sampling period applicable to the system under subsections (F)(1) or (F)(2) ~~of this section~~.
- N. ~~Upon its own initiative or in response to a written request by a large, medium, or small water system or~~

~~other interested party, the~~ The Department may modify its source water treatment determination or designation of maximum permissible lead and copper concentrations for water entering the distribution system on its own initiative or in response to a written request by a public water system or other interested party. A request for modification by a large, medium, or small public water system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The Department may modify its determination ~~where~~ if it concludes that ~~such a~~ change is necessary to ensure that ~~the system continues to minimize~~ lead and copper concentrations in source water are minimized. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the Department's decision, and provide an implementation schedule for completing the source water treatment modifications.

- O. ~~Where the results of sampling indicate an exceedance of~~ If a sample exceeds a maximum permissible ~~levels~~ level for lead or copper, the Department may require that the water supplier take 1 confirmation sample ~~be collected at the same sampling point,~~ as soon as possible but no later than 2 weeks after the initial sample was taken ~~but not to exceed 2 weeks, at the same sampling point.~~ If a Department-required confirmation sample is taken for lead or copper, ~~then~~ the results of the initial and confirmation sample shall be averaged ~~in determining to determine~~ compliance with the ~~Department-specified~~ maximum permissible ~~levels~~ level.

~~R.P.~~ The Department may reduce source water monitoring after designation of maximum permissible levels as follows:

1. A groundwater system ~~which that~~ demonstrates that water entering the distribution system has been maintained below the maximum permissible level for lead or copper designated by the Department for 3 consecutive compliance periods may reduce the monitoring frequency for lead or copper to once during each subsequent compliance cycle.
2. A surface water system ~~which that~~ demonstrates that water entering the distribution system has been maintained below the maximum permissible level for lead or copper designated by the Department for 3 consecutive years may reduce the monitoring frequency to once during each subsequent compliance cycle.
3. A water system that uses a new source is not eligible for reduced monitoring for lead or copper

until concentrations in samples collected from the new source during 3 consecutive monitoring periods are below the maximum permissible levels for lead or copper ~~specified~~ designated by the Department.

**R18-4-316. Public Education Requirements for Lead**

- A. A ~~community water system [CWS]~~ CWS that exceeds the action level for lead ~~based on the analytical results of tap water monitoring~~ shall, within 60 days of the end of the monitoring period do all of the following:
1. Insert a notice on each customer's water utility bill ~~which that~~ states in large print: "Some homes in this community have elevated lead levels in their drinking water. Lead can pose a significant risk to your health. Please read the enclosed notice for further information."
  2. Include with each customer's water utility bill a notice ~~which that~~ includes the text contained in Appendix ~~E~~ B of this Chapter.
  3. Provide the text contained in Appendix ~~E~~ B of this Chapter to the editorial departments of the major daily and weekly newspapers circulated throughout the community.
  4. Deliver pamphlets or brochures that contain the public education materials related to the health effects of lead and the steps that can be taken in the home to reduce lead exposure that are prescribed in Appendix ~~E~~ B of this Chapter to facilities and organizations, including the following:
    - a. Public schools ~~and/or or~~ local school boards,
    - b. City or county health department or environmental quality departments,
    - c. Women, Infants, and Children [WIC] and Head Start programs ~~whenever if~~ available,
    - d. Public and private hospitals and clinics,
    - e. Pediatricians,
    - f. Family planning clinics, and
    - g. Local welfare agencies.
  5. Submit a public service announcement to at least ~~five of the 5~~ 5 radio and television stations with the largest audiences that broadcast to the community served by the community water system.

The public service announcement shall contain the following language:

"Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That's why I urge you to do what I did. I had my water tested for [insert free or \$ per sample]. You can contact the [insert the name of the city or water system] for information on testing and on simple ways to reduce your exposure to lead in drinking water. To have your water tested for lead, or to get more information about this public health concern, please call [insert the phone number of the city or water system]."

- B. A CWS shall repeat the tasks contained in subsections (A) (1) through (4) every 12 months and the public service announcement prescribed in subsection (A)(5) every 6 months for as long as the system exceeds the lead action level.
- C. A ~~nontransient, noncommunity water system~~ NTNCWS that exceeds the lead action level ~~based on the analytical results of tap water samples~~ shall, within 60 days, deliver the public education materials ~~contained containing the language~~ in the "Introduction," "Health Effects of Lead", and "Steps You Can Take in the Home to Reduce Lead Exposure" paragraphs prescribed in Appendix ~~E B~~ of this Chapter as follows:
1. Post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system, and
  2. Distribute informational pamphlets or brochures on lead in drinking water to each person served by the ~~nontransient, noncommunity water system~~ NTNCWS.
- D. A NTNCWS shall repeat the public education tasks contained in subsection (C) ~~above~~ at least once during each calendar year for as long as the system exceeds the lead action level.
- E. A CWS or NTNCWS shall include the lead public education text prescribed in Appendix ~~E B~~ in all of the printed materials it distributes through its lead public education program. Any additional information presented by a public water system shall be consistent with the information contained in Appendix ~~E B~~ and be written in plain language that can be understood by persons served by the system. Where appropriate, public education materials shall be multilingual.

- F. A CWS or NTNCWS may discontinue delivery of public education materials if the public water system has met the lead action level during the most recent ~~six-month~~ 6-month monitoring period ~~conducted~~. A CWS or NTNCWS shall recommence public education in accordance with this Section if it subsequently exceeds the lead action level.
- G. By December 31st of each year, any a CWS or NTNCWS that is subject to the public education requirements in this Section shall submit a letter to the Department demonstrating that the system has delivered the public education materials that meet the content and delivery requirements ~~and the delivery requirements~~ prescribed in this Section. The letter shall include a list of all the newspapers, radio stations, television stations, facilities, and organizations ~~to which the system~~ that the CWS or NTNCWS delivered

public education materials during the previous year. A CWS or NTNCWS shall submit the letter required by this paragraph annually for as long as the public water system exceeds the lead action level.

**R18-4-402. Special Monitoring for Sodium**

- A. ~~Each community water system [CWS]~~ A CWS shall conduct monitoring for sodium.
- B. Each CWS shall collect 1 sample per water treatment plant. ~~The minimum number of samples required to be taken by the CWS shall be based on the number of water treatment plants used by the CWS, except that multiple~~ Multiple wells drawing raw water from a single aquifer may, with Department approval, be considered one treatment plant for purposes of determining the minimum number of sodium samples required.
- C. Each CWS shall collect and analyze 1 sample annually for each water treatment plant utilizing a surface water ~~sources~~ source, in whole or in part. A CWS shall collect and analyze 1 sample every 3 years for each water treatment plant utilizing only groundwater sources. The Department may require a water supplier to collect and analyze water samples more frequently in locations where the sodium content is variable.

**R18-4-403. Special Monitoring for Water Corrosivity Characteristics [repeal]**

*No change*

**R18-4-403. Special Monitoring for Nickel**

- A. Each ~~community water system and nontransient, noncommunity water system~~ CWS and NTNCWS shall ~~conduct monitoring~~ monitor for nickel.
- B. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor for nickel at each sampling point as prescribed in R18-4-218.
- C. A CWS or NTNCWS may composite samples for nickel as prescribed in R18-4-219.
- D. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor for nickel at the following frequencies:
  - 1. Each CWS and NTNCWS shall take 1 sample at each groundwater sampling point once every 3 years.

2. Each CWS and NTNCWS shall take 1 sample at each surface water sampling point annually.
- E. A water supplier may request a reduction in the monitoring frequency for nickel as follows:
1. Groundwater sampling points: The Department may reduce monitoring frequency ~~at a groundwater sampling point~~ from once every 3 years to a less frequent basis if ~~a public water system~~ the CWS or NTNCWS has monitored for nickel at least once every 3 years for 9 years at the groundwater sampling point and all ~~previous~~ analytical results ~~are~~ were below 0.1 mg/L.
  2. Surface water sampling points: The Department may reduce monitoring frequency ~~at a surface water sampling point~~ from annually to a less frequent basis if a ~~surface water system~~ CWS or NTNCWS has monitored annually at the surface water sampling point for at least 3 consecutive years and all ~~previous~~ analytical results for nickel ~~are~~ were below 0.1 mg/L.
  3. The Department may reduce monitoring frequency for nickel for a term not to exceed 9 years.
  4. A CWS or NTNCWS shall take at least 1 sample for nickel during the ~~term of~~ reduced monitoring term.
  5. In determining the appropriate reduced monitoring frequency at a sampling point, the Department shall consider the following factors:
    - a. Reported concentrations of nickel from all previous monitoring;
    - b. The degree of variation in the reported concentrations of nickel; and
    - c. Other factors that may affect the concentration of nickel such as changes in groundwater pumping rates, changes in the configuration of the CWS or NTNCWS, or changes in operating procedures, stream flows, or source water characteristics.
  6. A decision by the Department to reduce monitoring frequency for nickel at a sampling point shall be in writing and shall set forth the grounds for the decision. A water supplier may make a written request for reduced monitoring or ~~reduced monitoring may be granted on the Department's initiative~~ the Department may reduce monitoring on its own. A water supplier shall provide documentation of analytical results ~~which that~~ supports a request for reduced monitoring. ~~When If~~ a CWS or NTNCWS submits new data or ~~when~~ other data relevant to the public water system's appropriate monitoring frequency become available, the Department shall review ~~that the~~ data and,

~~where if~~ appropriate, revise its determination of ~~appropriate~~ monitoring frequency.

7. A CWS or NTNCWS ~~which that~~ uses a new source is not eligible for reduced monitoring until 3 consecutive rounds of monitoring from the new source have been completed.

**R18-4-504. Prohibition on the Use of Lead Pipe, Solder, and Flux**

Construction materials used in ~~the a~~ public water system, including residential and non-residential facilities connected to the public water system, shall be lead-free as defined at ~~R18-4-101(47)~~ R18-4-101(46). This ~~subsection~~ Section shall not apply to leaded joints necessary for the repair of cast iron pipes.

**Appendix A**

*Renumber 51 - 72 to 50 - 71*

**Appendix B**

*Repeal*

**Appendix C**

*Amend. Rename as Appendix B.*

**APPENDIX B**

**Detection Limits**

Detection shall be defined as greater than or equal to the following concentrations for each contaminant:

**A. Inorganic Contaminants**

<b>Contaminant</b>	<b>Methodology</b>	<b>Detection Limit (mg/l)</b>
Antimony	Atomic Absorption; Furnace	0.003
	Atomic Absorption; platform furnace	0.0008 <sup>g</sup>
	ICP-Mass Spectrometry	0.0004
	Hydride Atomic Absorption	0.001
Asbestos	Transmission Electron Microscopy	0.01 MFL <sup>g</sup>
Barium	Atomic Absorption; furnace	0.002
	Atomic Absorption; direct aspiration	0.1
	Inductively Coupled Plasma	0.002 (0.001) <sup>†</sup>
Beryllium	Atomic Absorption; furnace	0.0002
	Atomic Absorption; platform furnace	0.00002 <sup>g</sup>
	Inductively Coupled Plasma <sup>g</sup>	0.0003
	ICP-Mass Spectrometry	0.0003
Cadmium	Atomic Absorption; furnace	0.0001
	Inductively Coupled Plasma	0.001 <sup>†</sup>

Chromium	Atomic Absorption; furnace	0.001
	Inductively Coupled Plasma	0.007 (0.001) <sup>†</sup>
Copper	Atomic Absorption; furnace	0.001
	Atomic Absorption; direct aspiration	0.020
	Atomic Absorption; platform furnace	0.001
	Inductively coupled plasma	0.001
	Inductively coupled plasma; mass spectrometry	0.001
Cyanide	Distillation, spectrophotometric <sup>†</sup>	0.02
	Distillation, automated, spectrophotometric <sup>†</sup>	0.005
	Distillation, selective electrode <sup>†</sup>	0.05
	Distillation, amenable, spectrophotometric <sup>‡</sup>	0.02
Lead	Atomic absorption; furnace	0.001
	Atomic absorption; platform furnace	0.001
	Inductively coupled plasma	0.001
	Inductively coupled plasma; mass spectrometry	0.001
Mercury	Manual Cold Vapor Technique	0.0002
	Automated Cold Vapor Technique	0.0002
Nickel	Atomic Absorption; furnace	0.001
	Atomic Absorption; platform furnace	0.0006 <sup>†</sup>
	Inductively Coupled Plasma <sup>‡</sup>	0.005
	ICP-Mass Spectrometry	0.0005

Nitrate	Manual Cadmium Reduction	0.01
	Automated Hydrazine Reduction	0.01
	Automated Cadmium Reduction	0.05
	Ion Selective Electrode	1
	Ion Chromatography	0.01
Nitrite	Spectrophotometric	0.01
	Automated Cadmium Reduction	0.05
	Manual Cadmium Reduction	0.01
	Ion Chromatography	0.004
Selenium	Atomic Absorption; furnace	0.002
	Atomic Absorption; gaseous hydride	0.002
Thallium	Atomic Absorption; furnace	0.001
	Atomic Absorption; platform furnace	0.0007 <sup>5</sup>
	ICP-Mass Spectrometry	0.0003

**Footnotes:**

<sup>1</sup> Using concentration technique in Appendix A to EPA Method 200.7.

<sup>2</sup> MFL = million fibers per liter > 10 µm.

<sup>3</sup> Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.

<sup>4</sup> Screening method for total cyanides.

<sup>5</sup> Measures "free" cyanides.

<sup>6</sup> Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

## B. Volatile Organic Chemicals

The detection limit for all volatile organic chemicals is 0.0005 mg/l.

## C. Synthetic Organic Chemicals

<u>Contaminant</u>	<u>Detection Limit (mg/l)</u>
Alachlor	.0002
Atrazine	.0001
Benzo (a) pyrene	.00002
Carbofuran	.0009
Chlorodane	.0002
2,4-D	.0001
Dalapon	.001
Dibromochloropropane (DBCP)	.00002
Di(2ethylhexyl)adipate	.0006
Di(2-ethylhexyl)phthalate	.0006
Dinoseb	.0002
Dioxin	.000000005 (5 x 10 <sup>-9</sup> )
Diquat	.0004
Endothall	.009
Endrin	.00001
Ethylene Dibromide	.00001
Glyphosphate	.006
Heptachlor	.00004
Heptachlor epoxide	.00002
Hexachlorobenzene	.0001
Hexachlorocyclopentadiene	.0001
Lindane	.00002

Methoxychlor	.0001
Oxamyl (vydate)	.002
Pentachlorophenol	.00004
Picloram	.0001
PCBs (as decachlorobiphenyl)	.0001
Simazine	.00007
Toxaphene	.001
2,4,5-TP (Silvex)	.0002

<u>Aroclor</u>	<u>Detection limit (mg/L)</u>
1016	0.00008
1221	0.02
1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

~~D. Radiochemicals~~

~~The detection limit for monitoring radioactivity concentrations shall be that concentration which can be counted with a precision of plus or minus 100% at the 95% confidence level ( $1.96s$  where  $s$  is the standard deviation of the net counting rate of the sample).~~

- ~~To determine compliance with the maximum contaminant level for combined radium-226 and radium-228, the detection limit shall not exceed 1 pCi/L.~~
- ~~To determine compliance with the maximum contaminant level for gross alpha particle activity, the detection limit shall not exceed 3 pCi/L.~~
- ~~Detection limits for man-made beta particle and photon emitters are as follows:~~

<del>Man-made beta particle and photon emitters</del>		<del>Detection Limit</del>
<del>a.</del>	<del>Tritium</del>	<del>1,000 pCi/L</del>
<del>b.</del>	<del>Strontium-89</del>	<del>10 pCi/L</del>
<del>c.</del>	<del>Strontium-90</del>	<del>2 pCi/L</del>
<del>d.</del>	<del>Iodine-131</del>	<del>1 pCi/L</del>
<del>e.</del>	<del>Cesium-134</del>	<del>10 pCi/L</del>
<del>f.</del>	<del>Gross beta</del>	<del>4 pCi/L</del>
<del>g.</del>	<del>Other radionuclides</del>	<del>1/10 of the applicable limit</del>

*ADEQ repealed Appendix B because it created confusion within the regulated community regarding whether ADEQ intends to regulate testing laboratories and require that laboratories achieve the detection limits prescribed in Appendix B. ADEQ does not regulate environmental testing laboratories that perform drinking water analyses and has no jurisdiction to require by rule that certain method detection limits be achieved. The Arizona Department of Health Services Office of Laboratory Licensure and Certification [ADHS] regulates the laboratories that perform drinking water analyses. R9-14-613 requires that each testing laboratory have a written quality assurance plan that describes the actions to be taken by the testing laboratory to ensure that generated analytical data are scientifically valid and defensible and are of known and acceptable precision and accuracy. R9-14-613(B)(6) requires that each drinking water testing laboratory develop, document, and maintain current method detection limits and practical quantitation limits for each approved method and for each instrument of use.*

**10. A summary of the principal comments and the agency response to them:**

**Comment:** In the future, for each change in the rules, the reason for making the change should be provided. For example, if a change is required by EPA, this should be noted, because it might streamline the public review and comment process.

**Response:** ADEQ explained significant amendments to the drinking water rules in the preamble to the proposed rules that was published in the Notice of Proposed Rulemaking. ADEQ did not provide explanations in the preamble for nonsubstantive changes to the rules or amendments that were either self-explanatory or editorial in nature. None

of the revisions that ADEQ is making to the drinking water rules in this rulemaking are required by EPA.

**Comment:** Many sections of the rule specify that requests for monitoring reductions need to be made to the Department in writing. We would like to suggest that an addition be made to all sections that references requests for monitoring reductions, to include a time frame in which a water supplier can expect a written response from the Department. All requests should be responded to within 60 days. Presently, months can go by before any response is given and in some circumstances no response has been received. The result is an unnecessary cost to the water supplier as they continue to perform monitoring that could be waived by the Department.

**Response:** ADEQ disagrees that time frames for responding to requests for reduced monitoring should be included in this rulemaking. However, the rules that are prescribed in Chapter 4 which relate to requests for reduced monitoring by water suppliers may be subject to recently enacted licensing time frames statutes. Under A.R.S. §41-1073(A), a state agency which issues “licenses” is required to adopt final rules establishing the overall time frame during which the agency will either grant or deny each type of license that it issues. The term, “license,” is broadly defined by A.R.S. §41-1001(11) and includes “the whole or part of any agency permit, certificate, *approval*, registration, charter *or similar form of permission* required by law...” A written request to ADEQ to allow reduced monitoring at a sampling point could be interpreted as an application for a license, approval, or form of permission that is subject to the licensing time frames statutes. ADEQ currently is drafting a comprehensive set of licensing time frame rules. ADEQ is evaluating all of the licenses that it issues, including licenses that are issued by ADEQ’s Drinking Water Section. The recommendation to establish a 60-day time frame for ADEQ to respond to requests for reduced monitoring is appropriately addressed in the licensing time frame rulemaking. No change to the rules.

**Comment:** Many difficulties and questions which water systems have had to face regarding regulatory compliance arise from interpretations that the Department has chosen to follow. These problems have been persistent and few substantial policies have been published by ADEQ for drinking water compliance. The items that need to be more clearly defined at this time in rule are primarily those which the Department has had difficulty coming up with a consistent interpretations for, and for which ADEQ will document and consistently enforce. It does not appear that

the intent of this rule revision was to address those issues since the same questions persist even with the proposed changes. The rule should be revised with the objective of revising or rewording those sections that have consistently been a problem for the Department to develop policy for.

**Response:** The commenter does not identify rules which are subject to inconsistent interpretations or which need to be further clarified by ADEQ with enough specificity for ADEQ to respond. No change to the rules.

#### **R18-4-101. Definitions**

**Comment:** In R18-4-101(45), "initial monitoring year" needs to be designated by point of entry [POE], since new POE's may be added by the water system after the initial monitoring year.

**Response:** ADEQ agrees that the term, "initial monitoring year," needs to be defined in terms of the point-of-entry. A new point-of-entry may be added to a public water system if the system develops a new source. In such cases, the initial monitoring year for the new point-of-entry will differ from initial monitoring years that were established for existing points-of-entry. ADEQ's policy is to assign an initial monitoring year for a new point-of-entry to synchronize with the monitoring year that has been designated for the public water system under the standardized monitoring framework during which the system conducts routine monitoring at the other points-of-entry in the system. ADEQ revised the definition of "initial monitoring year" to add a specific reference to the point-of-entry.

**Comment:** There are no definitions for different violation types within the definition section (acute, MCL, treatment technique, and monitoring), which are referenced in R18-4-105.

**Response:** ADEQ disagrees that there should be definitions of the different types of violation in the definition section. The different types of violations are defined by the rule text. First, the term, "acute violations," is defined in R18-4-105(B)(2). The phrase, "violation of a maximum contaminant level" [MCL], is not amenable to concise definition. ADEQ's determination of whether there is a MCL violation is governed by the rules which prescribe the various MCLs for drinking water contaminants and their monitoring requirements. The determination of compliance with a MCL varies depending upon the contaminant category. For example, compliance with the MCLs for asbestos and for inorganic chemicals is based upon the analytical results of a single sample at a sampling point, unless a confirmation sample is required by the Department. If ADEQ requires a confirmation sample, compliance is

determined from the average of the analytical results of the initial and confirmation samples. Compliance with the MCLs for nitrate and nitrite is based upon the average of the analytical results of an initial sample and a mandatory confirmation sample. For a volatile organic chemical or a synthetic organic chemical, compliance is determined from a running annual average of the analytical results of samples that are taken at a sampling point if the public water system samples on a quarterly basis or more frequently. If a public water system samples for a VOC or SOC on an annual or less frequent basis, compliance with the MCL is determined from the analytical results of a single sample, unless a confirmation sample is required by ADEQ. If ADEQ requires a confirmation sample, compliance is determined from the average of the analytical results of the initial and confirmation samples. Compliance with the MCL for total trihalomethanes is determined from a running annual average of quarterly sample results. The determination of compliance with the MCLs for total coliform depends upon the size of the public water system, the number of samples taken, and repeat sample results. These few examples from the drinking water rules illustrate the difficulty in trying to write a concise definition of the phrase, “violation of a maximum contaminant level.”

Similarly, the phrase, “treatment technique violation,” does not lend itself to concise definition. Treatment techniques are prescribed in Chapter 4, Article 3. Any violation of a treatment technique requirement that is prescribed in Article 3 is considered a “treatment technique violation.” Treatment technique requirements for public water systems take up almost 13 pages of the Arizona Administrative Code. Treatment technique requirements include requirements for filtration, disinfection, corrosion control, and the use of epichlorohydrin and acrylamide.

In the same way, the term, “monitoring violation,” is not subject to concise definition. There are many monitoring requirements in the drinking water rules. Consequently, there are many kinds of monitoring violations. For example, the failure to conduct required monitoring, failure to comply with a prescribed monitoring frequency, failure to use an approved analytical method or a licensed laboratory, failure to conduct increased monitoring when it is triggered by analytical results, and the failure to take required confirmation samples are considered to be monitoring violations. Also, the failure to comply with a special monitoring requirement that is prescribed in Article 4 is considered a monitoring violation. ADEQ is concerned that any attempt to define the term, “monitoring violation,” may have unintended legal consequences. ADEQ is particularly concerned about the promulgation of an

underinclusive definition which “defines away” current monitoring requirements and impairs ADEQ’s ability to enforce those requirements. No change to the rules.

**Comment:** Tucson Water is pleased that the Department is taking steps to clarify a number of items in the rules that can be confusing. Changes that clarify and eliminate unnecessary language are appreciated. However, in some cases eliminating words can lead to increased confusion. Therefore, Tucson Water recommends that additional language be added to several definitions, specifically the definitions for "compliance cycle," "compliance period," "initial monitoring period," and "initial compliance period." The terms need to be defined adequately to clarify their relation to each other. Also, "three calendar year time frame" and "nine calendar year time frame" need to be defined regarding when the time frame begins and when it ends.

**Response:** ADEQ disagrees that additional language needs to be added to the definitions of “compliance cycle,” “compliance period,” “initial monitoring year,” or “initial compliance period” to clarify their relation to each other. These terms are already defined in terms of their relation to each other. For example, part of the current definition of “compliance cycle” at R18-4-101(11) states that a compliance cycle “*consists of three compliance periods.*” The definition of “compliance period” at R18-4-101(12) states that it is a three-calendar-year time frame “*within a compliance cycle.*” The definition of “initial compliance period” at R18-4-101(44) states that it is the *compliance period in a compliance cycle* during which a public water system conducts initial monitoring. Finally, the definition of “initial monitoring year” at R18-4-101(45) states that it is the calendar year designated by the Department *within a compliance period* during which a public water system conducts initial monitoring. ADEQ agrees that the phrases, “nine calendar year time frame” and “three calendar year time frame” needs to be more clearly defined with respect to when these respective time frames begin and end. ADEQ reinstated language which defines specific time frames in the definitions of “compliance cycle” and “compliance period” at R18-4-101(11) and (12) to address this concern. The current definitions of these terms specifically describe when compliance cycles and compliance periods begin and end. For example, the definition of “compliance cycle” states in part that the first compliance cycle begins January 1, 1993 and ends December 31, 2001, the second compliance cycle begins January 1, 2002 and ends December 31, 2010, and the third compliance cycle begins on January 1, 2011 and ends December 31, 2019. Similarly, the current definition of “compliance period” specifically describes the

dates when the first, second, and third compliance periods begin and end within the first compliance cycle. ADEQ had proposed to delete these specific time frames. ADEQ is persuaded that the specific time frames should be retained in these definitions to clarify when compliance cycles and compliance periods begin and end.

**Comment:** There needs to be a definition for "monitoring period." This term is used throughout R18-4-104 and is never defined. We know the term is different for various parameters, which intensifies the need for defining "required monitoring period," both in general and for each specific requirement.

**Response:** ADEQ disagrees that "monitoring period" should be defined. The term is self-explanatory. A definition of "monitoring period" could say little more than that it is an interval of time during which a public water system is required to conduct monitoring. The specific definition of each monitoring period that is prescribed in the current drinking water rules in R18-4-101 is impractical. As the commenter points out, monitoring periods that are prescribed in the current rules vary depending on the contaminant category, whether the system is a groundwater system or a surface water system, previous analytical results at a sampling point, and whether the public water system has reduced or increased monitoring at a sampling point. The monitoring periods are adequately described in the text of the rules that prescribe the specific monitoring requirements for different drinking water contaminants.

#### **R18-4-102. Applicability**

**Comment:** The requirement in R18-4-102(B) that the Director identify, in writing, the health hazard which provides grounds for initiation of any enforcement action, should be retained.

**Response:** ADEQ agrees. See response to next comment.

**Comment:** By striking the requirement in R18-4-102(B) that "the Director must identify in writing the health hazard which provides grounds for initiation of any enforcement" there is no protection to the owners or operators of semiprivate systems from unreasonable or punitive decisions by the Director. We feel the language should remain unchanged or be more specific in describing those circumstances in which the Director may take action.

**Response:** ADEQ agrees that the requirement in R18-4-102(B) "that the Director shall identify, in writing, the health hazard which provides grounds for initiation of any enforcement action" should be retained. ADEQ originally

proposed the deletion of this sentence because ADEQ felt it unnecessarily repeated the first sentence of R18-4-102(B) which states that the safe drinking water rules in Chapter 4 do not apply to a semipublic or private agricultural water system *unless a health hazard is identified*. Under R18-4-102(B), the only way that ADEQ can require a semipublic or private agricultural water system to comply with a rule in Chapter 4 is by taking an enforcement action against the system. An administrative enforcement action against a semipublic or private agricultural water system would be initiated by issuing an administrative compliance order. Any compliance order issued pursuant to R18-4-102(B) would include an identification of the health hazard which provides the jurisdictional grounds for taking the enforcement action. For this reason, ADEQ thought it was redundant and unnecessary to state in rule that the health hazard which provides grounds for the initiation of an enforcement action must be identified in writing. However, ADEQ acknowledges that the last sentence in R18-4-102(B) is consistent with A.R.S. §49-353(B) and (C) which mandate that ADEQ identify the health hazard. The sentence also provides guidance to ADEQ compliance staff and to the regulated community regarding when ADEQ can require a semipublic or private agricultural system to comply with a safe drinking water rule in Chapter 4. For these reasons, ADEQ reconsidered its proposal to delete the last sentence in R18-4-102(B). The sentence has been retained in the adopted rule.

**R18-4-103. General Recordkeeping Requirements**

**Comment:** To further simplify section R18-4-103, number 7 and number 8 should be combined as they say essentially the same thing and need not be in two separate sections.

**Response:** ADEQ agrees that R18-4-103(A)(7) and (8) can be combined to make the rule more concise. ADEQ combined the two sections in the adopted rule.

**R18-4-104. Reporting Requirements**

**Comment:** The term, "monitoring period," which is used in R18-4-104(E) and (G) is not defined in the definition section. The exact time frame for reporting is unclear in these sections without further definition.

**Response:** A definition of the term, "monitoring period," in the definition section will not clarify the exact time frames for reporting. The meaning of the term, "monitoring period," is apparent from the common meanings of its

constituent terms, “monitoring” and “period.” A “monitoring period” is an interval of time during which a public water system conducts monitoring. Monitoring periods vary in length depending upon the contaminant category and whether a public water system is conducting initial monitoring, reduced monitoring, or increased monitoring for a contaminant.

For example, one of the rules cited by the commenter, R18-4-104(E), prescribes the reporting requirements for tap water monitoring for lead and copper under R18-4-310. The rule requires the reporting of tap water monitoring information to ADEQ “within the first 10 days following the end of each monitoring period.” Under R18-4-310, tap water monitoring periods may range from 6 months to 3 years in duration. Initial tap water monitoring for lead and copper is conducted during two consecutive 6-month monitoring periods. If initial monitoring is completed and there are no exceedances of the action levels for lead and copper, then a small or medium-sized public water system may reduce the frequency of tap water monitoring to once per year. There is a provision in R18-4-310 which allows a further reduction in the frequency of tap water monitoring for lead and copper to once every three years. Thus, there are three different monitoring periods for tap water monitoring for lead and copper in R18-4-310. The time frame for reporting tap water monitoring results for all three monitoring periods is clear in R18-4-104(E). Regardless of which monitoring period applies, a public water system must report tap water monitoring information to ADEQ within 10 days following the end of the monitoring period. ADEQ does not believe that it is possible to define the phrase, “monitoring period,” in a way that will further clarify the time frames for reporting that are prescribed in R18-4-104. For these reasons, ADEQ did not include a definition of “monitoring period” in the adopted rules.

**Comment:** R18-4-104(S)(1)(h): This section has a grammatical error. There is no closing parens after di(2-ethylhexyl)phthalate.

**Response:** ADEQ agrees that there should be a closing parens in “di (2-ethylhexyl) phthalate.”

**Comment:** R18-4-104(S)(2)(a) has a grammatical error. The word "be" is missing from "A nondetect shall not "be" reported....."

**Response:** ADEQ agrees. ADEQ corrected the grammatical error in the final rule.

**Comment:** There are no identified time frames for reporting construction materials as required under R18-4-104(T). When are systems required to report this information and at what frequencies?

**Response:** See response to next comment.

**Comment:** When should the information required by R18-4-104(T) be reported? Once? Annually? This information should already be in the original plans that were submitted by the water system.

**Response:** See response to next comment.

**Comment:** The Arizona Department of Environmental Quality (ADEQ) should provide additional detail regarding R18-4-104(T). Specifically, it should indicate how much information is needed, frequency of reporting, and deadlines. This will ensure that ADEQ obtains the information it needs while the public water system does not expend unnecessary time and resources on the effort.

**Response:** See response to next comment.

**Comment:** Regarding the requirement to identify and report whether certain construction materials are present in distribution systems, which has been moved to section R18-4-104(T) following repeal of the special monitoring requirements for water corrosivity characteristics, the rule does not state how this information will be reported. Is there a reporting form approved by the state for this purpose? Is this a one-time requirement or does the requirement apply when changes are made to systems? If the reporting requirement extends beyond a single initial report, how frequently is the reporting required? Is a simple statement of "yes" to presence of the listed materials sufficient, or is the amount of the materials required to be reported? Although written policy should probably be used to provide guidance and details for compliance with this requirement, if ADEQ believes the reporting requirement must be retained in state rule, at least some minimal indication should be provided in the rule regarding what type of requirement this represents for water systems.

**Response:** R18-4-104(T) in the proposed rules restated 40 CFR §141.42(d). 40 CFR §141.42 prescribes special monitoring requirements for water corrosivity characteristics. 40 CFR §141.42(d) requires community water systems to identify whether certain construction materials are present in their distribution systems and report that information to the state. The list of construction materials includes: 1) lead from piping, solder, caulking, interior lining of distribution mains, alloys, and home plumbing; 2) copper from piping and alloys, service lines and home plumbing, 3) galvanized piping, service lines, and home plumbing, 4) ferrous piping materials such as cast iron and steel, and 5) asbestos cement pipe. 40 CFR §141.42(d) gives the states the discretion to require the identification

and reporting of other construction materials that are present in the distribution system that may contribute contaminants to drinking water such as vinyl-lined asbestos cement pipe and coal tar-lined pipes and tanks. Obviously, the proposed R18-4-104(T) was based directly upon 40 CFR §141.42(d).

Neither 40 CFR §141.42(d) nor the proposed R18-4-104(T) state when public water systems are required to report information on construction materials, what the frequency of the reporting is, or what the reporting format is. ADEQ agrees with the commenter that the failure to include a reporting time frame, frequency, or format makes this subsection vague and unenforceable. Also, the purpose of the construction materials reporting requirement is unclear. It is not clear how the reported information on construction materials is to be used by the state when it is reported. ADEQ does not believe that the identification and reporting of distribution system construction materials is necessary after the promulgation of comprehensive lead and copper rules which prescribe corrosion control requirements, the prohibition on the use of lead pipe, solder, and flux at R18-4--504, the establishment of a MCL and monitoring requirements for asbestos, and the current rules which regulate additives and materials and products which come into contact with drinking water. Finally, the current drinking water rules already require water suppliers to submit design plans and specifications for potable water distribution system construction projects to ADEQ for review. A water supplier must obtain ADEQ approval of a distribution system construction project before any construction may begin. For all of these reasons, ADEQ repealed the reporting requirement that was proposed at R18-4-104(T) and did not include the subsection in the adopted rules.

**Comment:** There is no reference in the Administrative Code to the required procedures for reporting analytical data for drinking water. There are forms available from ADEQ, however, there are several errors that require correction. In order that a lab may comply with the approved methodologies and reporting, there should be direction stated in the Code.

**Response:** ADEQ disagrees that there are no references in the Arizona Administrative Code to the required procedures for reporting analytical data for drinking water. A.A.C. R18-4-104 prescribes reporting requirements in detail, including reporting deadlines. R18-4-104(Q) requires that the results of all analyses that are completed pursuant to Safe Drinking Water requirements be reported “in a manner and on forms approved by the Department.”

ADEQ's standard forms include instructions on how to report analytical results of drinking water analyses. ADEQ agrees that there may be errors on some of the Department's reporting forms which need to be corrected. However, ADEQ does not think it advisable to prescribe the reporting forms in rule. If the forms are prescribed in rule, they cannot be updated or corrected without going through the rulemaking process.

**Comment:** The City of Phoenix acknowledges that it has a responsibility to report and give public notice of the occurrence of waterborne disease outbreaks under R18-4-104(M) and R18-4-105(A)(2)(c). However, local health agencies would have to make the determination that a waterborne disease outbreak has occurred. Therefore, there should be a procedure for those agencies to work closely with the City so reporting and public notice are timely.

**Response:** ADEQ agrees that there should be coordination between public water systems and local health agencies to ensure timely reporting and public notice of waterborne disease outbreaks that may be attributable to the water that is provided by a public water system. ADEQ agrees that it is the local health agency that makes the determination as to whether a waterborne disease outbreak has occurred. The Arizona Department of Health Services [ADHS] has promulgated administrative rules which prescribe reporting requirements and control measures for communicable diseases, including outbreaks of waterborne illness from unspecified agents. Under the ADHS rules, local health agencies are responsible for conducting disease outbreak investigations, submitting communicable disease reports to ADHS, and implementing control measures. Unfortunately, the ADHS rules do not specifically require local health agencies to provide notice to public water systems of the occurrence of a waterborne disease outbreak that may be associated with the water the public water system provides.

ADEQ does not have jurisdiction to regulate local health agencies or mandate coordination procedures. However, ADEQ does have jurisdiction to regulate public water systems. Thus, R18-4-104(O) requires a public water system to report the occurrence of a waterborne disease outbreak that may be attributable to water provided by the public water system to ADEQ as soon as possible but no later than 24 hours after "actual notice" of the waterborne disease outbreak. ADEQ interprets the word "actual notice" in this rule to mean after notice of the occurrence of a waterborne disease outbreak is provided to the public water system by a local health agency.

R18-4-105(A)(2)(c) requires a water supplier to give public notice of the occurrence of a waterborne disease

outbreak that may be attributable to water distributed by a public water system as soon as possible but no later than 72 hours after the occurrence. Again, the occurrence of a waterborne disease outbreak is determined by the local health agency. The public notice requirement in R18-4-105(A)(2)(c) is triggered by a public water system's receipt of notice from the local health agency that there has been an occurrence of a waterborne disease outbreak that may be attributable to the water distributed by the public water system.

ADEQ agrees with the commenter that coordination procedures between local health agencies and public water systems should be established to ensure timely reporting and public notice of the occurrence of waterborne disease outbreaks that may be attributable to the water that is distributed by a public water system. ADEQ does not have the regulatory authority to prescribe coordination procedures in the drinking water rules or require local health agencies to implement them. Nothing prevents a public water system from opening lines of communication with the local health agency and establishing voluntary coordination procedures to ensure timely and effective public notice of the occurrence of waterborne disease outbreaks.

**Comment:** The phrase, "monitoring period," needs to be defined in R18-4-104(A). Also, what happens if a monitoring result is not received within 10 days following the end of the monitoring period?

**Response:** ADEQ disagrees that the phrase, "monitoring period," needs to be defined for the reasons stated in responses to previous comments. If a monitoring result is not received by ADEQ within 10 days of the end of a monitoring period, then ADEQ will notify the public water system of its failure to comply with the reporting requirement and request the submittal of the monitoring data. If a public water system conducted the required monitoring during the monitoring period but failed to report in a timely manner, then there is a reporting violation which is cured by the submittal of the monitoring results. However, if a public water system fails to report

because the public water system did not conduct the required monitoring during the monitoring period, then the failure to conduct the required monitoring is a monitoring violation which triggers public notice requirements.

**Comment:** How do the requirements in R18-4-104(S) [now R18-4-104(U)] relate to Appendix B, which defines different detection limits?

**Response:** The concentrations that are prescribed in R18-4-104(U) are reporting limits, not detection limits. See response to the next comment.

**Comment:** Regarding the proposed addition of reporting limits, the Department has gone into great detail in specifying levels at which analysis results cannot be reported as non-detected results. However, reporting levels for results expressed as "less than" values without being designated "not detected" by the laboratory are not addressed. Results expressed as "less than" values without also being identified as "not detected" do not necessarily indicate whether the substance was detected. Such results may indicate that the analysis procedure does not determine whether the substance was detected. They may also indicate that the substance was detected but not at a quantifiable level. Therefore, "less than" results which are not identified as "not detected" cannot be assumed to be "non-detections."

Reporting practices for results below the quantification level vary among laboratories and vary even more dramatically depending on the types of analytical methods. For example, VOC analysis results are reported by some laboratories in a manner which distinguishes between non-detections and detections which are "less than" a quantifiable level (which may be far below the regulatory detection level requirement of 0.0005 mg/L). Other laboratories report all VOC results as "less than" a specified level if quantified levels are not found, without distinguishing whether those results represented detections. Because detection down to at least 0.0005 mg/L has been established as a regulatory requirement, actual detections below the 0.0005 mg/L level are not considered detections for regulatory purposes. However, some laboratory clients wish to have low-level VOC detections reported to them to help show encroaching pollution as early as possible.

In contrast, it is very uncommon for inorganic analysis results which are below quantifiable levels to be reported in manner which distinguishes non-detections from detections which are less than the quantifiable level. Unlike VOCs, there are very few inorganic substances for which any regulatory detection level is required. Inorganics for which results are below quantification level are almost always reported as "less than" the lowest quantifiable level without determination of whether the substance was detected.

Therefore, if reporting levels need to be specified in ADEQ rule for "not detected" results, they also need to be specified as well for the other types of "less than" values. This could be accomplished either by defining each type of reported value and listing each in the reporting rules, or by simply adding the words or "less than" value after the word "nondetect" each time it is used in R18-4-104.

**Response:** ADEQ's intended purpose in proposing R18-4-104(S) [now R18-4-104(U)] was to establish certain levels for the reporting of analytical results to ensure ADEQ's ability to determine compliance with maximum contaminant levels and other regulatory "trigger" levels that are prescribed in the drinking water rules. ADEQ may not have adequately explained its intent in the preamble to the proposed rules. In particular, ADEQ's imprecise use of the words, "nondetect" and "nondetection," in the preamble and the proposed rule apparently led to confusion and unintended interpretations of the proposed rule. In the preamble, ADEQ stated that it intended to establish "limits on the reporting of *nondetections* in analytical results." Also, in various places in the proposed rule, ADEQ stated that a water supplier shall not report a "nondetect" at a concentration which exceeds certain prescribed concentrations. Despite the use of the term, "nondetection," in the proposed rules, ADEQ was *not* trying to prescribe detection limits or practical quantification levels in the proposed rule. Rather, ADEQ was trying to establish reporting limits, i.e., values which ADEQ deems to be necessary for determining compliance with MCLs or various regulatory trigger levels that are prescribed in the drinking water rules.

ADEQ acknowledges that compliance data is often reported as a "less than" value and that the use of "less than" values may not indicate whether a contaminant was detected. ADEQ's current reporting limits policy states that for the purposes of reporting compliance data, a nondetection must be reported with a "less than" sign [ "<" ] in front of the method detection limit. This requirement is now stated in the adopted rule in R18-4-104(U). Sample results that

are reported as nondetections [e.g., “ND” or “Not Detected”] must be accompanied by a numeric “less than value” which represents the detection limit achieved by the laboratory.

The current reporting policy goes on to state that compliance data must be reported with “less than” signs in front of other reporting or regulatory trigger levels, as appropriate. One of the underlying purposes of the current reporting limits policy and R18-4-104(U) is to prevent the reporting of “less than values” at numeric concentrations that are too high for purposes of determining compliance with MCLs or other monitoring trigger levels. ADEQ’s use of the word, “nondetect,” in this context was a misnomer. The imprecise use of the word, “nondetect,” as an umbrella term to encompass both nondetections and other types of “less than values” was confusing. In the adopted rules, ADEQ revised R18-4-104(U) by deleting all references to the phrase, “as a nondetect,” and replacing the phrase with “as a less than value.” For example, the second sentence in the opening paragraph of R18-4-104(U) states: “A water supplier shall not report a *“less than value”* at a concentration which exceeds any of the following reporting limits....” The revised language is more consistent with ADEQ’s intention to establish reporting limits for purposes of determining compliance with MCLs and other regulatory trigger levels. ADEQ did not intend to establish method detection limits or practical quantification levels in R18-4-104(U).

**Comment:** On page 13 of the preamble [for the Notice of Proposed Rulemaking], the last paragraph under “Reporting Limits,” is the statement: "subsection S prohibits the reporting of non-detections at concentrations that are below MCLs and regulatory trigger levels" erroneous? Most non-detections should be below MCLs.

**Response:** ADEQ agrees that a “nondetection” means that the concentration of a contaminant is below the method detection level [MDL] for the analytical method used. ADEQ also agrees that MDLs are established at concentrations that are far below maximum contaminant levels. As stated in a response to the previous comment, ADEQ’s use of the term, “nondetection” in the preamble and the rule was incorrect. ADEQ eliminated all references to the words, “nondetection” or “nondetect,” in the adopted rule.

#### **R18-4-105. General Public Notification Requirements**

**Comment:** The term "editorial comments" has been added to R18-4-105(G). This term is vague and requires better

definition.

**Response:** ADEQ disagrees that the phrase, “editorial comments,” needs definition. The phrase is easily understood when it is read within the context of R18-4-105(G). The complete sentence where the phrase occurs reads as follows: “Each public notice shall be conspicuous and free of unduly technical language, small print, *editorial comments*, or similar problems which frustrate the purposes of the notice.” The purpose of a public notice is to inform water users of: 1) the occurrence of a waterborne disease outbreak that may be attributable to the water distributed by the public water system; 2) a violation of a maximum contaminant level, treatment technique, or a monitoring requirement; or 3) the grant of a variance or exemption to the public water system. Under R18-4-105(G), the contents of a public notice must provide a clear and readily understandable explanation of any violation, any potential adverse health effects, the population at risk, the steps the public water system is taking to correct the violation, the necessity for using alternative water supplies, if any, and any measures the consumer should take to minimize exposure until the violation is corrected. Editorial comments in a public notice [e.g., opinions or explanations by the water supplier] which dispute or confuse whether there has been a violation, which minimize or discount potential adverse health effects, which misrepresent the steps that the public water system is taking to correct a violation, or which mislead consumers with respect to the need to use alternative water supplies or take precautionary measures to reduce exposure to contaminants, frustrate the purpose of the public notice. ADEQ added the phrase, “editorial comments,” to R18-4-105(G) to prevent the issuance of public notices which contain opinions or explanations which subvert the purpose of the notice.

**Comment:** The City requests a definition or clarification of the term “...editorial comments...” in the proposed rule at R18-4-105(G). Water systems have the right to appropriate explanations of issues surrounding a potential violation. We recommend that ADEQ meet with water systems to discuss public notification requirements in general and we propose that there be coordination between a water system and ADEQ in the development of

public notifications on a case-by-case basis so that the final product meets regulatory requirements and the needs of the the public water system, the customers, and other publics.

**Response:** ADEQ disagrees that there is a need to define or clarify the phrase “editorial comments” for the reasons stated in the response to the previous comment. ADEQ agrees that water suppliers have the right to make appropriate explanations of issues surrounding a violation in a public notice. Water suppliers do not have the right to make explanations which frustrate or subvert the purpose of a public notice. ADEQ also agrees with the commenter’s recommendation that a water supplier consult with ADEQ regarding public notice requirements before a public notice is issued. However, ADEQ does not believe that prior consultation should be required by rule or that ADEQ should exercise some form of prior restraint with regard to public notices. Except for the required inclusion of the mandatory health effects language that is found in Appendix A of the drinking water rules in certain public notices, R18-4-105 does not mandate that any particular language be included in a public notice. The water supplier has a certain amount of discretion in composing a public notice which is limited only by the requirements of R18-4-105(G). ADEQ encourages consultation on the content of a public notice, but ADEQ does not believe that prior consultation should be required by rule.

**Comment:** R18-4-105(A)(1)(a) should clarify when a violation occurs. Is it when the result is received, when ADEQ notifies the system, when the sample was collected, etc. ?

**Response:** A violation is deemed to occur when analytical results which indicate a violation are received by the public water system. The reporting rule clearly states at R18-4-104(B) that it is the receipt of analytical results which indicates a violation that starts the time frames for reporting the violation to ADEQ. To be consistent, the receipt of analytical results which indicates a violation also starts the “clock” for publishing public notice.

**Comment:** ADEO should develop an example of a public notice that, if followed, would meet the requirements of this rule.

**Response:** Examples of acceptable public notices should not be placed into rule. Public notices will vary depending upon the circumstances of the violation and the individual public water system. The contents of a public notice may vary depending upon the nature of the violation, the population at risk, and the steps that a public water

system takes to correct the violation. A boilerplate public notice may not be appropriate for all public water systems. ADEQ encourages public water systems to consult with the agency for guidance on the drafting of public notices. ADEQ can provide examples of public notices to public water systems upon request.

**Comment:** The requirements for ADEQ's notice in the proposed rule at R18-4-105(J) [now R18-4-105(I)] should be identified. They should be similar to the requirements for the public water system's notice.

**Response:** ADEQ disagrees that the requirements for ADEQ's notice should be identified in rule or that they should be similar to the requirements for a public water system's notice. Under the National Primary Drinking Water Regulations, states have *discretion* to provide public notice on behalf of public water systems. The relevant federal regulation, 40 CFR §141.32(g), states:

The State may give notice to the public required by this section on behalf of the owner or operator of the public water system if the State complies with the requirements of this section. However, the owner or operator of the public water system remains legally responsible for ensuring that the requirements of this section are met.

It is only when a state chooses to provide public notice on behalf of the owner or operator of a public water system that it is required to comply with public notice requirements that apply to public water systems. ADEQ drafted the subsection of the rule to clarify that ADEQ will *not* provide public notice on behalf of the owner or operator of a public water system. Consequently, ADEQ does not have to comply with the same public notice requirements that apply to public water systems. If a public water system fails to provide public notice as required by the rule, ADEQ reserves the right to provide notice to affected customers by any means available, including any of the methods that are prescribed in R18-4-105 [i.e., publication in a newspaper, TV or radio broadcast, direct mail, hand delivery, posting, or by press release] to protect public health. ADEQ tried to make it clear that such notice would not be on the water supplier's behalf. The water supplier is legally responsible for compliance with applicable public notice requirements. However, if a water supplier fails to comply with public notice requirements, ADEQ reserves the right to provide notice to customers to protect public health.

**Comment:** Under R18-4-105, clarification is needed regarding when a public water system must give public notice

of a violation. Is the time frame measured from the date a system samples or the date the system receives its final result?

**Response:** The time frame for giving public notice of an MCL violation is measured from the date that the water supplier receives analytical results which indicate a violation of an MCL [See reporting rule at R18-4-104].

**Comment:** With regard to public notice, the rule does not specify that the Department must review the notice prior to its release and the rule does state that the water supplier is legally responsible for ensuring that the requirement of this section is met.

**Response:** The rule does not and should not require ADEQ review of a public notice prior to its release. The public notification rule, R18-4-105, provides adequate guidance to the water supplier regarding the required content of a public notice. There are no requirements to include any particular language in a public notice except for the requirement to include the mandatory health effects language which is prescribed in Appendix A if there is a MCL or treatment technique violation. The content requirements for public notices that are prescribed in the rule are self-explanatory. Requiring ADEQ review of a public notice prior to publication or its distribution may unnecessarily delay issuance of the notice. While ADEQ supports consultation on public notices and can provide assistance on the drafting of a public notice, ADEQ does not believe that prior review should be a regulatory requirement.

**Comment:** The proposed R18-4-105(J) [now R18-4-105(I)] refers to the state providing public notice on behalf of a water system. We feel this section should conform more closely to the federal rule which requires the state to comply with the specifics of the section (40 CFR §141.32). The revised rule states "*...by any of the methods listed in this section....*" As the water supplier is legally responsible, the state should only use language that has been drawn up and approved by the water systems or allow water systems to have a part in drawing up the language of notices so that they are acceptable to all parties.

**Response:** ADEQ disagrees. R18-4-105(I) states that ADEQ shall *not* provide public notice on behalf of a water supplier. The water supplier is legally responsible for compliance with public notification requirements that are prescribed in R18-4-105. Under the adopted rule, it is only when a public water system fails to comply with public notice requirements, that ADEQ reserves the right to take action to provide notice to persons served by that public water system as necessary to protect public health. Since, under the circumstances contemplated by the rule, ADEQ will not provide public notice on behalf of the water supplier, ADEQ is not bound by the requirements of the public notification rule and can provide such notice as it deems appropriate to protect public health.

The commenter is correct that R18-4-105(I) does not conform to the federal rule at 40 CFR §141.32(g). ADEQ intended that the state rule be different. Under the federal rule, states have discretion to provide public notice on behalf of the owners or operators of public water systems. If a state chooses to provide public notice on behalf of a public water system, the state must comply with the applicable requirements of the public notification rule. ADEQ specifically rejected this option in the first sentence of R18-4-105(I). The first sentence of R18-4-105(I) makes clear that ADEQ will *not* act on behalf of water suppliers and provide public notice for them. Water suppliers are responsible for compliance with public notification requirements. However, if a public water system fails to give timely public notice as required by the rule, ADEQ reserves the right to notify affected customers when ADEQ determines that notice is necessary to protect public health. If a water supplier fails to comply with public notification requirements, the water supplier has no right to preapprove the content of any notice that ADEQ may give or have any part in drafting the language of an ADEQ notice so that is acceptable to the water supplier.

#### **R18-4-106. Use of Approved Analytical Methods**

**Comment:** Laboratories are expected (assumed) to know what EPA-approved method references are applicable to the monitoring parameters. Why is there not a table listing the approved methods for each of the parameters?

**Response:** Prior to the revisions of the drinking water rules that were effective on April 28, 1995, the ADEQ drinking water rules contained tables which listed the approved analytical methods for each of the contaminants. ADEQ repealed the tables of analytical methods because, under current state law, the Arizona Department of Health Services [ADHS] approves analytical methods for drinking water. The tables of approved analytical methods for drinking water are found in ADHS rules at R9-14-609.

**R18-4-109. Sample Collection, Preservation, and Transportation**

**Comment:** Since water systems will be required to identify compliance samples at the time samples are submitted to the laboratory, ADEQ needs to add a provision in rule and develop policy for sample invalidation. If samples are reported with QA/QC problems (e.g. surrogate recovery problems or matrix interference problems requiring a higher reporting limit), systems must have a methodology to resample and have the resample replace the original sample result. Otherwise, systems will be required to give public notice on the original sample, since it will not meet proper reporting requirements.

**Response:** See response to comment below.

**Comment:** The City requests that a procedure for invalidating "compliance" samples, where appropriate, and submitting resamples be established.

**Response:** See response to comment below.

**Comment:** A system operator should not be allowed to sample until a desirable result is achieved. However, this proposed change will punish an honest system operator by eliminating the flexibility to not submit sampling results that do not represent actual water quality. If this change is made, the rules should be modified elsewhere to clearly outline the procedures for invalidating sampling results that reflect sampling or laboratory error.

**Response:** See response to comment below.

**Comment:** A new requirement specified in R18-4-109 is that a water system must identify a sample as a compliance sample prior to analysis. If this requirement is added to the rule, it will intensify the need for the Department to include in the rule a procedure for the invalidation of compliance samples and criteria for when a water system can determine a sample result is invalid. As the situation stands now, the system has no way of clearing up obvious analysis problems on compliance samples. The Department continues to show "violations" for samples that should be allowed to be declared invalid due to laboratory contamination or anomalous data. This is a serious problem and needs to be addressed. Some procedure needs to be spelled out in rule.

**Response:** ADEQ reconsidered its proposal to require the identification of compliance samples prior to laboratory analysis. ADEQ's original intent in proposing this requirement was to prevent a water supplier from collecting a sample, having the sample analyzed, and then choosing whether to report the analytical results to ADEQ depending upon whether the sample results exceeded a maximum contaminant level or some other regulatory trigger level prescribed in the drinking water rules. ADEQ concluded that the identification of compliance samples prior to laboratory analysis will not prevent a water supplier from "picking and choosing" sample results to report to ADEQ. Under the current rules, the water supplier is legally responsible for reporting analytical results to ADEQ. A water supplier may make arrangements for a testing laboratory to report analytical results directly to ADEQ, but nothing in the rules requires direct reporting to ADEQ by the laboratory. A water supplier may make arrangements for the laboratory to report all analytical results to the water supplier. Thus, a water supplier can still "pick and choose" which sample results to report, regardless of whether the rules require that a sample be identified as a compliance sample prior to its submittal to the laboratory. For this reason, ADEQ withdrew the proposed requirement to identify compliance samples prior to laboratory analysis.

The commenter raises legitimate issues regarding quality assurance [QA], quality control [QC], and sample invalidation. Several commenters recommended that ADEQ develop a policy on sample invalidation and that some provision needs to be in rule. ADEQ agrees that issues related to QA / QC and sample invalidation may need to be addressed in rule. However, ADEQ did not propose a rule which addresses this subject matter in this rulemaking. Under A.R.S. §41-1025, ADEQ may not adopt a rule which is substantially different from the proposed rules. One of the factors that must be considered in determining whether an adopted rule is substantially different from a

proposed rule is the extent to which the subject matter of the proposed rule or the issues determined by that rule are different from the subject matter or issues involved in the proposed rule. Since the proposed rules did not address QA / QC or sample invalidation criteria or procedures, ADEQ cannot adopt a rule which addresses this subject matter without going through supplemental rulemaking. While the sample invalidation issues raised by the comment may be important, ADEQ cannot address them without substantially delaying this rulemaking. ADEQ will defer consideration of sample invalidation and QA/ QC issues to a future rulemaking.

#### **R18-4-117. Unsafe Supplies**

**Comment:** The language in R18-4-117(B) should not be stricken from rule. With upcoming wellhead protection programs, ADEQ should be aware of well abandonments and the cause for source abandonments.

**Response:** ADEQ disagrees. The current R18-4-117(B) merely cross-references a rule on well abandonment that the Department of Water Resources administers and enforces [ R12-15-816 ]. The current R18-4-117(B) does not even require that a public water system give notice to ADEQ of the abandonment of a well. ADEQ disagrees that the repeal of this provision will compromise wellhead protection programs.

**Comment:** R18-4-117(B) should be retained. Several groundwater basins in the state are designated as sole source aquifers. Since the Tucson basin was the first sole source aquifer designated by the U.S. Environmental Protection Agency, the District believes that the elimination of R18-4-117(B) will create an unfair economic burden to the District and other local water providers. The District strongly supports the retention of the well abandonment provision to help support its wellhead protection efforts.

**Response:** ADEQ does not see how R18-4-117(B) relates to the designation of sole source aquifers or how its repeal creates an “unfair economic burden” to water suppliers. The adopted rule repeals R18-4-117(B), eliminating a redundant and unnecessary provision in the drinking water rules. See response to previous comment.

#### **R18-4-119. Additives**

**Comment:** The requirements in R18-4-119 pose four significant problems for Arizona’s water utilities. First, some chemicals used in Arizona water systems and many of the materials and products routinely used are not, as yet,

certified by the National Sanitation Foundation [NSF]. Second, for some NSF-certified materials and products, there is only one, or perhaps a small number of certified suppliers, and those who are certified may be a long way away from Arizona. Third, NSF certification looks only at the possible leaching of contaminants into the drinking water. In other words, a product might be a poorly made piece of junk, yet if it doesn't introduce unacceptable levels of contaminants into water it can be NSF-certified. Fourth, compliance with the requirements will likely result in significant cost increases for the design and construction of potable water facilities.

Some progress has been made in trying to rectify the described problems. The Arizona Legislature passed Senate Bill 1275, which opens up the possibility in some instances of using products and materials other than those having NSF certification. While S.B. 1275 opens up the possibility of using other products, it still leaves unanswered several significant issues: 1) the requirement to use NSF-certified materials or one of the approved alternatives under SB 1275 will likely add 5% to 10% to the design costs for water facilities; 2) contractors may have to go to distant sources for products and materials they have customarily purchased from local manufacturers and suppliers. When strictly enforced, this will likely add substantially to the construction cost of projects and delivery times; and 3) forcing utilities to buy NSF-certified products or materials could result in forcing shoddy products upon the utility. The proposed rule incorporates the requirements of S.B. 1275 but does not deal with the potential significant cost impacts for design and construction, or the potential of forcing shoddy materials onto the water utilities of Arizona.

**Response:** A.R.S. §49-353.01 requires ADEQ to adopt rules which prescribe minimum standards for equipment and materials that come into contact with drinking water that is used by any domestic or industrial water supply sold or distributed to the public. The law states that ADEQ must consider standards for chemicals, materials, or equipment that have been certified by National Sanitation Foundation when it adopts the rules. ADEQ interprets the law to mean that NSF-certified equipment and materials are deemed to comply with the requirements of the statute. A.R.S. §49-353.01 allows the use of alternatives to NSF-certified equipment and materials under some limited circumstances. Under the law, alternatives to NSF-certified materials may be used when chemicals, materials, and equipment that come into contact with drinking water are essential to the design, construction, or operation of the drinking water system and 1) they are not NSF-certified, or 2) they are NSF-certified but they are only available from

one source. It is only under these limited circumstances that the use of alternatives is permitted. The law does not allow the use of alternatives when their use may reduce design and construction costs or because they are available locally and NSF-certified materials are not. ADEQ incorporated the requirements of A.R.S. §49-353.01 into rule. The adopted rule allows the use of alternatives under the conditions allowed by state law. Until the law is revised, ADEQ cannot allow the use of alternative materials and products under other conditions.

#### **R18-4-121. Enforcement**

**Comment:** Language should be added to R18-4-121 which states that ADEQ will consult with a system operator prior to informing anyone else about that system's compliance status. This would prevent situations in which third parties receive erroneous or misleading information about a system due to inaccurate or incomplete data in ADEQ's drinking water database. A procedure needs to be established, either as part of the rule or as a strictly adhered-to policy, that specifies the steps taken to inform a system of compliance status and the measures a system can take to correct any problems that may have led to the determination. At no time should other entities or the public be informed of a system's noncompliance, as has happened in the past, without first notifying and giving the system the opportunity to address the situation and clarify any discrepancies that may exist between the system's records and the Department's.

**Response:** ADEQ disagrees. Notification of a public water system owner regarding changes in the system's compliance status is governed by recently enacted state law. In the First Regular Session of 1997, the Arizona Legislature enacted S.B. 1252 into law, amending A.R.S. §49-354 by adding a new subsection (E). §49-354(E) requires the Department to notify the owner of a public water system or the owner's designated agent of any change in the water quality compliance status of the system. Notice of a change in the water quality compliance status of a public water system must be provided to the owner immediately after its discovery, regardless of whether any enforcement action will be taken by ADEQ. A.R.S. §49-354(E) also directs the Department to set up a system for providing notification to the water supplier or his designated agent of any change in compliance status of a public water system. ADEQ must establish a system which provides notice of any changes in a public water system's compliance status within 30 days of ADEQ's discovery of the change. This system for notifying water suppliers of compliance status changes must be established within one year of the effective date of A.R.S. §49-354(E), or by July

21, 1998. ADEQ is working to develop a system for providing monthly compliance status reports to regulated public water systems.

The new law is silent regarding prior consultation with water suppliers when third party requests for information about a public water system's compliance status are made. Since the new law requires immediate notification of a public water system owner or the owner's designated agent of any change in water quality compliance status, it is unlikely that a third party will have access to compliance status information before the public water system owner. Compliance status information [i.e, information on violations of MCLs and treatment technique requirements, monitoring violations, reporting violations, operation and maintenance deficiencies, etc], is public record. Under A.R.S. §49-205(A), any records, reports, or information obtained from any person, including records, reports, or information obtained or prepared by ADEQ under Chapter 2, Article 9 [Potable Water Systems] are public records that shall be available to the public. Under Arizona's public records law, any person may request to examine or be furnished with a copy of any public record maintained by ADEQ during office hours [See A.R.S. §39-121]. A third party is entitled to inspect public records within a reasonable time after a request is made and at a time and in a way that will not cause a disruption of public business. ADEQ does not believe that it can legally refuse to disclose access to compliance status information in order to consult with a water supplier regarding the accuracy of the requested information.

**Comment:** The section on enforcement needs more clarification, specifically subsections A and B. In subsection B, this enforcement should only be directed when a system is out of compliance for water quality violations. The sentence should read "*...not in compliance with any of the water quality provisions of this....* "

**Response:** ADEQ disagrees that R18-4-121 should be clarified as recommended by the commenter.

R18-4-121(A) cross-references the relevant environmental nuisance and potable water system enforcement provisions that are found in the Arizona Revised Statutes. Under A.R.S. §49-141(9), water that is sold to the public or distributed to the public that is unwholesome, poisonous, or contains deleterious foreign substances, filth, or disease-causing substances or organisms is defined as an environmental nuisance. Under A.R.S.

§49-141, the Director of ADEQ may take action to abate an environmental nuisance by serving an order which requires that a person abate the nuisance. While enforcement actions under A.R.S. §49-141 may be limited to drinking water quality violations because of the way that A.R.S. §49-141(9) defines environmental nuisance, there is no such limitation on enforcement actions taken pursuant to A.R.S. §49-354. Under A.R.S. §49-354(A), a person who violates a provision of the Arizona Revised Statutes related to potable water systems [A.R.S. §49-351 through §49-356] or a rule adopted pursuant those statutes [i.e., the drinking water rules found in Chapter 4], is guilty of a Class 2 misdemeanor. Under A.R.S. §49-354(B), if the Director of ADEQ determines that a person is in violation of a provision of the statutes which relate to potable water systems or a rule adopted pursuant to those statutes, the Director may issue an administrative compliance order. A.R.S. §49-354(C) authorizes the Director, through the Attorney General, to request injunctive relief and A.R.S. §49-354(D) authorizes civil penalties for violations of the drinking water rules. These statutes do not limit enforcement actions to water quality violations only. They authorize enforcement action for a violation of any rule contained in Title 18, Chapter 4.

The use of R18-4-121(B) for enforcement action should not be limited to water quality violations only. The statutory authority for R18-4-121(B) is found in A.R.S. §49-353(A)(2)(b). The statute provides that the Director shall adopt rules which provide that “no water supply system, water treatment plant, distribution system, distribution system extension, water treatment method or device, appurtenance and device used in water supplies or water supply systems be constructed, reconstructed, installed or initiated *before compliance with the standards and the rules has been demonstrated* by approval of the plans and specifications by the department.” Again, this authority is not limited to enforcement actions for water quality violations only. ADEQ may order a public water system to make no further service connections if the system is out of compliance with any of the rules prescribed in Title 18, Chapter 4. No change to the rules.

**Comment:** Section R18-4-121(C) states that the Department may determine compliance and enforcement based on analytical results and other information compiled by many different agencies. We feel this language is too vague. What is meant by "other information"? Compliance should be determined based on concrete, measurable criteria and not on undefined, unspecified "information."

**Response:** R18-4-121(C) is a restatement of enforcement provisions that are found in the National Primary Drinking Water Regulations. 40 CFR §141.23(l)(4), §141.24(h)(18), and §141.25(e) each provide that a “[s]tate has the authority to determine compliance or initiate enforcement action *based upon analytical results and other information compiled by their sanctioned representatives and agencies.*” For example, the state could take enforcement action based upon information compiled by county agencies that have been delegated authority to implement the safe drinking water program. R18-4-121(C) is consistent with these National Primary Drinking Water Regulations. The rule provides authority for ADEQ to initiate enforcement action based upon information other than that provided by the water supplier through self monitoring. No change to the rules.

**Comment:** The rule should specify how a system will be notified if the Department finds them to be out of compliance.

**Response:** ADEQ disagrees. ADEQ’s current compliance and enforcement policy addresses how ADEQ will provide notification of a violation to a water supplier. The current enforcement and compliance policy states that when ADEQ identifies a violation of the safe drinking water statutes or rules, either through an inspection or the submittal of records to ADEQ, that ADEQ will make a decision whether to issue a compliance status letter, a notice of violation, an administrative order, or to seek civil penalties or injunctive relief in Superior Court. ADEQ’s decision on what enforcement action to take is based upon consideration of the following factors:

1) the risk to human health and the environment; 2) the violator's indifference to the law; and 3) the violator's previous compliance history. The current policy does not require that a compliance status letter or a notice of violation be issued before issuing an administrative compliance order or seeking civil penalties or injunctive relief in court.

The current compliance and enforcement policy provides specific guidance on the use of compliance status letters and written notices of violation. The policy states that when ADEQ records indicate an existing violation that is older than 180 days and no ADEQ enforcement action has been initiated and no human health or environmental danger exists, a compliance status letter may be sent to the water supplier prior to the issuance of a notice of violation. Such letters state the compliance status of the facility based upon ADEQ records and require that the recipient submit evidence to ADEQ within 30 days which demonstrates that a previously identified violation has been corrected or that the alleged violation does not exist. Compliance status letters also state that if there is no response or the response does not establish that a violation has been corrected or does not exist, then a written notice of violation will be issued by ADEQ. A compliance status letter also may include an offer to enter into a consent order or consent judgment.

The compliance and enforcement policy further states that ADEQ will review all self-monitoring and other compliance-related reports submitted by a water supplier within 30 days of receipt. The policy states that if self-monitoring reports indicate that there is a violation, then ADEQ will send written notice of the violation to the water supplier within 30 days of receipt of the self-monitoring report. The policy also states that ADEQ will establish a compliance tracking system which can track whether self-monitoring and other compliance-related reports are submitted in a timely way. The policy states that if a water supplier fails to submit required compliance data within 15 days of the required submittal date, ADEQ will send written notice of the violation to the water supplier. The policy also states that when an ADEQ inspector discovers a violation in the course of an inspection of a public water system, the inspector shall provide written notice of the violation to the water supplier or his representative at the end of the inspection. The inspector also must provide written notice of any

violation within 45 days after the inspection. For all other violations, the policy requires that ADEQ provide written notice of the violation within 15 days of the date that ADEQ becomes aware of the violation.

The compliance and enforcement policy provides specific guidance on the contents of any written notice of violation.

At a minimum, a written notification of violation must include: 1) the factual nature of the violation, 2) the legal authority regarding compliance, 3) a description of what constitutes compliance and how it is documented, 3) a timeframe in which ADEQ expects compliance to be achieved, 4) an offer to meet, and 5) a statement of the consequences.

ADEQ's current enforcement and compliance policy should *not* be incorporated into rule. The policy describes ADEQ's approach to compliance and enforcement matters and it preserves the agency's discretion to decide individual enforcement cases. Unlike a rule, the compliance and enforcement policy does not compel the issuance of notices of violation in all cases or limit ADEQ's enforcement discretion. No change to the rules.

**R18-4-206. Monitoring Requirements for Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, Nickel, Selenium, and Thallium**

**Comment:** The statement in the proposed rules at R18-4-206(J) that "a water supplier shall not conduct monitoring at a sampling point at a frequency greater than quarterly" is questionable. How could this be enforced? Why should a system not be allowed to sample its own wells if it wants to? Also, this could seriously hamper hydrologic investigations. Inserting the word "compliance" before "monitoring" would correct this. Also, the last sentence in section J is confusing.

**Response:** ADEQ agrees that the limitation on compliance monitoring at a frequency greater than quarterly may not be enforceable and should be deleted. ADEQ did not intend to limit the frequency of monitoring for purposes other than for compliance monitoring. A water supplier may conduct monitoring of its own wells as frequently as it wants to [e.g., for trend analysis or hydrologic investigations]. ADEQ did not include this provision in the adopted rule.

**Comment:** In section R18-4-206( J) of the proposed rules, the statement specifying that systems shall not conduct monitoring at a frequency greater than quarterly should be changed to insert the word "compliance" monitoring, as a system should be able to conduct any monitoring it may feel necessary for discretionary testing.

**Response:** ADEQ agrees that a public water system should be able to conduct monitoring at a sampling point at a frequency that is greater than quarterly. ADEQ deleted the limitation on monitoring frequency from R18-4-206(J).

#### **R18-4-208. Nitrate; monitoring requirements**

**Comment:** The additional language added to R18-4-208(F) adds clarity and will be appreciated by all water systems that have continuously fallen into a continual increased and then reduced nitrate monitoring loop.

**Response:** ADEQ believes that the added language in R18-4-208(F) addresses the problem of “retriggering” increased monitoring requirements after it has been demonstrated that nitrate concentrations are reliably and consistently below the maximum contaminant level at a sampling point. The added language will reduce monitoring burdens without compromising public health protection.

**Comment:** The sentence inserted into R18-4-208(F) regarding subsequent detections not triggering quarterly monitoring needs to be revised. If the proposed language is retained, the following scenario could occur: A well could have one anomalous hit of nitrate with a concentration that is greater than 5 mg/L. This would trigger quarterly monitoring, during which time the nitrate levels could drop back down below 5 mg/L, prompting the Department to reduce the monitoring frequency. Several years later, the well could begin showing a steadily increasing nitrate level, say from 6 mg/L up to 9 mg/L, for reasons totally unrelated to the previous hit (for example, an upgradient land owner could begin using a lot of fertilizer). The Department could not require quarterly monitoring of this well, even though it is very close to the MCL, because of this rule change. There should be some wording, perhaps specifying a time limit, that could be added to prevent this type of situation.

**Response:** ADEQ does not agree that additional language or time limits should be added to R18-4-208(F) to address the hypothetical situation described in the comment. As long as annual nitrate monitoring continues to indicate that nitrate concentrations are below the maximum contaminant level, then there is no need to require

increased monitoring frequency at a sampling point. The adopted rule requires that the annual sample be taken during the quarter which previously yielded the highest nitrate concentration. Also, there is nothing in the rules which prevents a water supplier from taking additional nitrate samples at a sampling point if trend analysis indicates that nitrate concentrations are gradually increasing in a particular well.

**Comment:** Clarification and consistency are still needed in several areas regarding monitoring triggers, particularly for nitrate monitoring. The rule states that 5 mg/L nitrate-N is the nitrate value that triggers more frequent monitoring. Most water suppliers have interpreted this to mean nitrate values reported as 5.0 mg/L or more as nitrogen. However, there has been some indication in past years that ADEQ staff may interpret the 5 mg/L level as being based on one significant figure, since MCL compliance is based on rounding to significant figures, which would suggest that all nitrate-N values of 4.6 mg/L and above trigger the additional monitoring. The problem is not in the statement of the trigger value in the rule, but in how the Department chooses to apply the rule. To alleviate that problem, we request adding a statement to the rule specifying whether values are to be rounded to one significant figure to determine whether additional monitoring is triggered. Also, since MCL compliance presumably will continue to be based on use of two significant figures for nitrate and total nitrate plus nitrite, clarification is needed regarding whether actual analysis results with two significant figures should continue to be reported for nitrate to allow determination of compliance with MCLs. That is, will nitrate results for use as monitoring triggers be reported differently than for MCL determination? Clarification should be provided regarding the use of rounding and significant figures as they pertain to monitoring triggers.

**Response:** Both the state drinking water rules and the National Primary Drinking Water Regulations that prescribe the monitoring requirements for nitrate are silent with respect to rounding and the use of significant figures as applied to determinations of compliance with monitoring triggers. There are statements in the National Primary Drinking Water Regulations which indicate that compliance with maximum contaminant levels is based upon *rounding to the same number of significant figures as the MCL for the drinking water parameter in question* [e.g., 40 CFR §141.23(m) and §141.25(d)]. ADEQ revised the enforcement rule at R18-4-121(D) to include this general principle. The federal regulations are silent regarding the use of rounding and significant figures with respect to determining whether a monitoring trigger has been exceeded. It would be logical to use the same general principle

that applies to determining compliance with MCLs and apply it to the determination as to whether a monitoring trigger has been exceeded. That is, compliance with monitoring triggers could be based upon rounding analytical results to the same number of significant figures as the monitoring trigger in question. However, there is no agency consensus on what the compliance data policy should be regarding the use of rounding and significant figures for purposes of determining exceedances of monitoring triggers. There may be reasons to have different data policies for MCL compliance purposes and for purposes of determining exceedances of monitoring triggers. ADEQ will defer consideration of the issues related to the use of rounding and significant figures to a future rulemaking.

#### **R18-4-212. Volatile Organic Chemicals; Monitoring Requirements**

**Comment:** R18-4-212(B) "January 1, 1993" should be deleted.

**Response:** ADEQ agrees that the reference to "January 1, 1993" in R18-4-212(B) is outdated and should be deleted.

**Comment:** R18-4-212(J)(4): When would a confirmation sample be required? What is an obvious sampling error? Shouldn't results that reflect laboratory errors also be deleted from the calculation? Please note that R18-4-216(L) (SOCs) does not contain this provision.

**Response:** R18-4-212(J) leaves confirmation sampling to ADEQ's discretion. This is consistent with the parallel provision in the National Primary Drinking Water Regulations which addresses confirmation sampling for volatile organic chemicals. 40 CFR §141.24(f)(13) provides that "[t]he State *may* require a confirmation sample for positive or negative results [emphasis added]" There may be a variety of reasons for requiring a confirmation sample. ADEQ does not believe that the rule should attempt to list the possible grounds for requiring confirmation samples. Any list may be incomplete and could be interpreted as being an exclusive list.

ADEQ agrees that the last sentence in R18-4-212(J) which states that the Department may delete the results of obvious sampling errors from calculations to determine compliance is unnecessary and should be deleted.

**Comment:** R18-4-212(K) and R18-4-216(L): What will be the basis for requiring a confirmation sample? The rules should clearly state that any sampling result that is inconsistent with previous sampling results for the same

well, and with previous or concurrent sampling results for adjacent wells, will be considered suspect, and will require a confirmation sample. In cases involving detections of compounds that have commonly been attributed to laboratory error (a list should be included with the rules), the system should be considered in compliance if the contaminant is not found in the confirmation sample. Sampling results that cannot be confirmed should be invalidated and should not become part of the state's drinking water database.

**Response:** ADEQ disagrees that the rule should state that any sampling result that is inconsistent with previous sampling results and with previous or concurrent sampling results from adjacent wells should be considered suspect and will require a confirmation sample. ADEQ also opposes the development of a list of drinking water contaminants that are automatically suspect because they commonly have detections that are attributed to laboratory error. Reasonable persons may differ regarding which drinking water contaminants "commonly have detections that are attributed to laboratory error."

**Comment:** R18-4-212(L), first paragraph: The rule should specify that the waiver would be for that sampling point only. Also, the word 'during' should be left in the rule, because if it is changed as shown, it may imply that a system can get a waiver if VOCs are detected during the initial monitoring, as long as they don't detect anything *after the* initial monitoring.

**Response:** ADEQ agrees. ADEQ amended the subsection to clarify that a monitoring waiver for a volatile organic chemical is granted for a sampling point. ADEQ also agrees that the word, "during," should be retained [See R18-4-212(K)].

**Comment:** R18-4-212(L)(1): The term, “zone of influence,” should be defined. The waiver application form specifies a one-half-mile radius around the well, instead of the well's zone of influence.

**Response:** The state’s use waiver provision at R18-4-212(L)(1) where the term, “zone of influence,” is used, is a restatement of the federal use waiver provision at 40 CFR §141.24(f)(8). Neither the state rules or the National Primary Drinking Water Regulations currently provide a definition of “zone of influence.” ADEQ interprets “zone of influence” to mean the area around a pumping well within which the water table or the potentiometric surface is changed due to groundwater withdrawal. The zones of influence of different wells may vary depending upon pumping rates, transmissivity, and other factors. It is not a fixed radius. The commenter is correct that the state’s waiver application form requires evaluation of VOC use within a one-half mile radius around the wellhead. However, the one-half mile radius does not represent the “zone of influence” of a well. ADEQ chose a one-half mile radius to simplify the use waiver application process and to efficiently implement the use waiver monitoring program. The use of a one-half mile radius avoids the requirement to do a site-specific evaluation to determine the zone of influence of an individual well to support a use waiver application. The one-half mile radius around the wellhead is a default value which reasonably includes the zone of influence of any well and takes into consideration the typical travel times of VOCs in groundwater and the potential risk of contamination over the term of a monitoring waiver.

**Comment:** R18-4-212(L)(2) [now R18-4-212(K)(2)]: These factors are not consistent with the susceptibility screening portion of the waiver application. Point sources listed in the rule are not consistent with the VOC sources that are listed in the use waiver application.

**Response:** The language of the susceptibility waiver provision at R18-4-212(K)(2) is a restatement of the federal susceptibility waiver provision at 40 CFR §141.24(f)(8)(ii). The factors that are listed in R18-4-212(K)(2) are identical to the factors that are prescribed in the parallel National Primary Drinking Water Regulation, including the factor which requires consideration of the proximity of a public water system to a potential point source or nonpoint source of contamination before a susceptibility waiver may be granted. The point sources that are listed

in the state rule are provided as examples and the list is not exclusive. Other examples of point sources that are included on the waiver application form are not inconsistent with the rule. No change to the rules.

**Comment:** The last sentence needs to be revised in R18-4-212(L)(3) [now R18-4-212(K)(3)]. As written, a system could end up being penalized for previously having a waiver (i.e., if a system's waiver is not renewed, then they must sample annually, whereas if they had never had a waiver, their monitoring requirements would only be 1 sample every 3 years [See R18-4-212(G)].

**Response:** The last sentence in R18-4-212(K)(3) is a restatement of the federal monitoring waiver provision at 40 CFR §141.24(f)(9). Both the state rule and the National Primary Drinking Water Regulation require public water systems that are groundwater systems to take one sample at each sampling point during the time that a monitoring waiver is effective. Both rules require the system to update its vulnerability assessment and the state to reconfirm that the system is not vulnerable to contamination. Both rules provide that if the state does not make a reconfirmation of nonvulnerability within 3 years of the initial determination, the monitoring waiver is invalidated and the public water system is required to sample annually. This annual monitoring requirement is consistent with the repeat monitoring requirements for VOCs that are specified in R18-4-212(G) and 40 CFR §141.24(f)(5). Under both the federal and state rules, a public water system may reduce VOC monitoring from quarterly to annually if no VOCs are detected during initial monitoring. A public water system may further reduce monitoring from annually to once every three years if no VOCs are detected after a minimum of three years of annual sampling.

ADEQ does not agree that the last sentence in R18-4-212(K)(3) penalizes a public water system for having a monitoring waiver. If the monitoring waiver is invalidated, the public water system is required to conduct repeat monitoring in the same way that public water systems that are not granted monitoring waivers are required to conduct repeat monitoring. Also, a public water system whose susceptibility waiver is not reconfirmed is eligible

to further reduce VOC monitoring to once every three years after three years of annual monitoring are completed and there are no VOC detections in the same way that public water systems that are not granted monitoring waivers can reduce monitoring. No change to the rules.

**R18-4-213. Vinyl Chloride; Monitoring Requirements**

**Comment:** R18-4-213 states that vinyl chloride monitoring is required only when there has been a detection of another specified VOC compound at a given sampling point. R18-4-219(E)(3) states: "Vinyl chloride samples shall not be composited." How is a sampler or laboratory to know if there has ever been a hit previously detected, and whether or not to proceed with compositing? The required ADEQ reporting form does not specify the exception for vinyl chloride monitoring. To avoid error and possible data rejection, would it not be appropriate to rule out compositing of volatile organics altogether?

**Response:** Compositing of samples for volatile organic chemical analysis is specifically authorized by both the National Primary Drinking Water Regulations and the state drinking water rules. Therefore, ADEQ does not agree that it should prohibit sample compositing for VOC analysis. Sample compositing for vinyl chloride should not be allowed because vinyl chloride monitoring is a type of follow-up monitoring that is required only when certain VOCs are detected in a drinking water sample. The ADEQ reporting form for VOCs may be confusing because it includes vinyl chloride and that there is nothing on the form or in the instructions which states that vinyl chloride monitoring is required only when specified VOCs are detected in a drinking water sample. The VOC reporting form should be corrected to clarify that public water systems are not required to conduct routine monitoring for vinyl chloride.

**R18-4-217. Radiochemicals: MCLs and Monitoring Requirements**

**Comment:** There is a reporting requirement that combined Radium-226 and Radium-228 not exceed the detection limit of 1 pCi/L. There is no formalized method for combining detection limits. One client may ask that it be done in a different manner than another. We request a detection limit requirement for each parameter at 1 pCi/L.

**Response:** ADEQ agrees that there is no detection limit for *combined* radium-226 and radium-228 and no way to combine the detection limits for the two parameters. ADEQ deleted Appendix B which contained proposed detection limits for radiochemicals. Instead, ADEQ adopted reporting limits for radiochemicals in R18-4-104(U). ADEQ prescribes separate reporting limits for radium-226 and radium-228 of 1 pCi/ L respectively. There is no reporting limit for combined radium-226 and radium-228.

**Comment:** There is no definition of detection limit in the rules. The EPA series 900 Methods do not address this issue either. Some labs may be reporting counting uncertainty, others MDA [minimum detectable activity]. For example, having the labs report sample specific Currie detection limits would level the playing field.

**Response:** ADEQ repealed Appendix B which prescribes detection limits. There are no detection limits for radiochemicals in the adopted rules. Consequently, there is no need for a definition of “detection limit” in the rules. ADEQ adopted reporting limits for radiochemicals which are expressed in picocuries per liter.

**Comment:** There are really no guidelines for the laboratories when there are elevated levels of solids in the drinking water samples. When the sample has a high level of suspended or dissolved solids present, the detection limit for Gross Alpha and Gross Beta of 3 pCi/L cannot always be met. In some cases, the sample can be analyzed for a longer period of time, allowing the detection level to be met. There is, however, a decrease in accuracy with a longer count. While Gross Alpha precipitate methods are available, no remedy is available for Gross Beta.

**Response:** The adopted drinking water rules do not prescribe required detection limits for gross alpha and gross beta particle radioactivity. Instead, ADEQ adopted reporting limits for gross alpha and gross beta that are based upon the current detection limits for radiochemicals that are prescribed in the Code of Federal Regulations at 40 CFR §141.25(c). The reporting limit for gross alpha particle radioactivity is 3 pCi/ and the reporting limit for gross beta particle radioactivity is 4 pCi/L. The reporting limits for gross alpha is the same as the federal detection limit for gross alpha particle radioactivity [3 pCi/L]. The reporting limit for gross beta particle radioactivity also is established at the federal detection limit for gross beta particle radioactivity [4 pCi/L]. It should be noted that approximately 95% of all radiochemical analyses that have been submitted to ADEQ meet the current detection

limits that are prescribed in the federal regulations, even samples with elevated solids content.

EPA recently approved the use of 66 analytical methods to determine compliance with current radionuclide drinking water standards [See 62 Federal Register 10168, March 5, 1997]. One of the EPA-approved analytical methods is a co-precipitation methodology for gross alpha particle radioactivity. The co-precipitation method may be used for the analysis of drinking water samples with high dissolved solids content [i.e. TDS > 500 mg/L or higher]. The co-precipitation procedure eliminates the problem of self-absorption that is associated with high sample solids content and it is more sensitive than the evaporation method for gross alpha particle radioactivity. It can be used for gross alpha particle radioactivity screening of drinking water samples with high dissolved solids content and it can generate results which will meet the required reporting limit of 3 pCi/L.

As the comment correctly points out, a similar remedy is not available for gross beta particle radioactivity. There is no co-precipitation method for gross beta particle radioactivity. The approved analytical method for gross beta particle radioactivity is an evaporation method [See Method 7110B in Standard Methods for the Examination of Water and Wastewater, 19th Edition, p. 7-13]. The description of the evaporation method for gross beta particle radioactivity indicates that the problem of self absorption of radiation from beta emitters by sample solids is not as great as the self-absorption problem for alpha emitters. However, the evaporation method description notes that it is important that proper sample preparation procedures be followed and that the counting instrument be properly calibrated to obtain accurate gross beta radioactivity results. The method notes that the choice of a calibration standard may influence gross beta results because self absorption factors and counting chamber characteristics are beta-energy dependent. For low level counting of beta particle radioactivity, the evaporation method states that it is imperative that all moisture be evaporated from the drinking water sample. Also, it is preferable that all organic matter be destroyed before depositing a thin film of sample solids [10 mg/cm<sup>2</sup> or less on the bottom of the counting pan] from which beta particle radiation may enter the counting instrument. The method detection limit for gross beta particle radioactivity analysis is 4 pCi/L. Again, ADEQ estimates that approximately 95% of the radiochemical sample results that are submitted to ADEQ currently meet this detection limit. ADEQ believes that a public water system can meet the reporting limit of 4 pCi/L prescribed in the adopted rules by carefully following the sample

protocols in the approved analytical method, even when a drinking water sample has a high dissolved solids content.

Finally, it should be noted that only a few public water systems in Arizona are required to conduct monitoring for gross beta particle radioactivity [i.e., surface water systems which serve more than 100,000 persons, community water systems that ADEQ determines are subject to potential health risks from manmade radioactivity, and community water systems which utilize water that may be contaminated by effluents from nuclear facilities]. ADEQ believes that very few, if any, gross beta particle radioactivity results will fail to meet the reporting limit of 4 pCi/L. ADEQ concluded that the acceptability of compliance data for gross beta particle radioactivity that does not meet the reporting limit of 4 pCi/L because of high sample solids content can be addressed on a case-by-case basis by ADEQ's compliance tracking unit. The adoption of a rule that specifically addresses this subject matter for the few systems that cannot comply with a reporting limit of 4 pCi/L is unjustified.

**Comment:** The Arizona Drinking Water report forms have a discrepancy with the stated reporting levels in the proposed rules. State forms ask for 3 pCi/L MDL value for Gross Beta, while the proposed rules specify 4 pCi/L for Gross Beta.

**Response:** There is a discrepancy between the reporting limit for gross beta particle radioactivity that is prescribed in the adopted rules and the method detection limit that is stated in ADEQ's radiochemical reporting form. ADEQ will correct its reporting form.

**Comment:** The City supports the change of designated sampling sites within this section. Point-of-entry (POE) monitoring, instead of source monitoring, will provide monetary savings for the City and provide consistency for the Water Quality and Engineering sampling staff.

**Response:** ADEQ agrees. The change from source monitoring to point-of-entry monitoring should reduce radiochemical monitoring burdens for community water systems.

**Comment:** R18-4-217(H)(3)(c): Tritium has a relatively short half-life. How much would its concentration decrease if it is stored for one year, for purposes of compositing?

**Response:** Tritium has a half-life of 12.26 years. ADEQ does not know how much the concentration of tritium will decrease in a sample if the sample is stored for one year for purposes of compositing. Regardless of how much the concentration decreases, composite tritium samples are allowed under the National Primary Drinking Water Regulations. R18-4-217(H)(3)(c) is a restatement of the federal radiochemical rule at 40 CFR §141.27((b)(4)(iii). Both the federal and state rules require community water systems which utilize water that may be contaminated by effluents from nuclear facilities to conduct annual monitoring for tritium by means of the analysis of a composite of four consecutive quarterly samples or the analysis of four quarterly samples. 40 CFR §141.27(b)(4)(iii) states that the latter procedure [i.e., the analysis of four quarterly samples] is recommended. It is possible that EPA recommends the latter procedure instead of one-year composite samples because of tritium's "relatively short half-life" as noted by the commenter. However, the National Primary Drinking Water Regulation permits the analysis of an annual composite of four consecutive quarterly samples. So does the 19th edition of Standard Methods for the Examination of Water and Wastewater. Standard Methods prescribes a maximum holding time for tritium of one year to allow for the compositing of four quarterly samples [See 7010B, Sample Collection and Preservation, Table 7010:I, Standard Methods, p. 7-2]. While the concentration of tritium in a composite sample may decrease over the one-year holding time, both the federal rule and Standard Methods currently allow compositing and one-year holding times. No change to the rules.

**Comment:** In the section covering radiochemical requirements, there is still no explanation as to what the Department wants a system to report and when. Do systems report the gross alpha screen or the adjusted gross alpha from which uranium is subtracted? In addition to the required uranium analysis when the gross alpha screen exceeds 15pCi/L, will it be an option for water systems to have uranium analyzed and subtracted from the gross alpha screen result (i.e. report "adjusted gross alpha")? The rule and the ADEQ report form are confusing to the systems and labs as to what to report. The current ADEQ report form specifies that uranium is subtracted from the gross alpha result, even though the subtraction is only required when the 15 pCi/L trigger is met. It should be clarified that the uranium analysis requirement is the minimum required, and is not prohibited as an option even when not triggered. This clarification would allow water systems to continue to use the gross alpha screening value minus uranium (adjusted gross alpha) as the trigger for radium analysis if they wish.

**Response:** ADEQ agrees that its Drinking Water Radiochemical Analysis Report form is confusing and needs to be corrected to be consistent with the adopted rule. Under R18-4-217(B)(3) of the adopted rule, a public water system may substitute gross alpha particle radioactivity screening for radium-226 and radium-228 monitoring provided the measured gross alpha particle activity does not exceed 5 pCi/L. If a public water system uses gross alpha particle radioactivity screening as a substitute for radium-226 and radium-228 monitoring, the water supplier must report the gross alpha particle radioactivity measurement *without subtracting uranium* in order to determine compliance with the 5 pCi/L monitoring trigger that is prescribed in R18-4-217(B)(2)(a). It is only when a gross alpha particle activity measurement exceeds 15 pCi/L that the water supplier must have the same sample analyzed for uranium, the uranium result subtracted from the gross alpha particle activity measurement, and the *adjusted* gross alpha particle radioactivity calculated to determine compliance with the maximum contaminant level that is prescribed in R18-4-217(A)(2). A water supplier cannot report an adjusted gross alpha particle radioactivity result for purposes of determining whether the 5 pCi/L monitoring trigger for radium-226 is exceeded. A water supplier should calculate adjusted gross alpha radioactivity only when the “non-adjusted” gross alpha particle radioactivity measurement exceeds 15 pCi/L.

**Comment:** We request clarification of the monitoring frequency for radiological chemicals. The federal rule states the monitoring frequency as “...at least every four years.... ” The revised ADEQ rule says “once every four years...” Clarification is needed regarding whether the repeat monitoring is to be started within four years of the beginning of the year when previous monitoring was started or done, the end, or some other time frame.

**Response:** Repeat monitoring for radiochemicals must be done within four years of the date that previous radiochemical monitoring was completed [See R18-4-217(B)(1)].

**Comment:** The application of "combined" radium-226 and radium-228 is problematic. If the rule does not require use of a single analysis method for combined radium-226 and radium-228 (as seems to be the case), then clarification is needed regarding how to add results for each parameter. ADEQ has during recent years suggested that radium results reported as "less than" values cannot be added to determine "combined" radium. The revised rule specifies detection limits for radiochemicals. However, this does not answer questions about the levels at which "less than" values which are not identified as "nondetections" are to be reported and used. As discussed above regarding reporting of "nondetections" and "less than" values, required detection limits do not establish the quantified levels at which results will be reported.

**Response:** ADEQ agrees that the determination of compliance with the maximum contaminant level for combined radium-226 and radium-228 is problematic when analytical results of radiochemical analyses are reported as "less than values." ADEQ prescribes reporting limits for both radium-226 and radium-228 in the adopted rules at R18-4-104(U). The rule states that a "less than value" for radium-226 or for radium-228 shall not exceed 1 pCi/L. However, the rules are silent with regard to how such "less than values" should be used when determining compliance with the maximum contaminant level for combined radium-226 and radium-228. ADEQ's policy is that a radium-226 or radium-228 sample that is reported as a "less than value" which complies with the prescribed reporting limits [i.e., "< 1 pCi/L"] shall be calculated as zero for purposes of determining compliance with the MCL for combined radium-226 and radium-228 that is prescribed at R18-4-217(A)(1).

#### **R18-4-219. Sample Compositing**

**Comment:** There are different sample volume requirements for the two VOC instrument techniques. The GC method purges 5 mL, while the GC/MS method purges 25 mL. According to R18-4-219(E)(1) and (2), GC/MS VOC compositing instructions request 5 mL aliquots (from each collection point) to be injected into the 25 mL purging device. GC compositing requests 5 mL aliquots to be collected in a 25 mL syringe, then 5 mL removed and

transferred to a 5 mL purging device. If 1 mL aliquots could be introduced directly into the GC purging device, similar to the GC/MS instructions, a more representative sample would be obtained. Is this an acceptable deviation from the rule?

**Response:** The special sample compositing rules for compositing VOC samples prior to gas chromatography [GC] or gas chromatography / mass spectrometry [GC/MS] analysis that are prescribed in R18-4-219(E) are a restatement of federal sample compositing regulations for VOCs that are prescribed in the National Primary Drinking Water Regulations at 40 CFR §141.24(f)(14)(iv) and (v). The federal GC compositing rule does not address the direct injection of 1 ml aliquots into the GC purging device. Instead, the sample compositing protocol in the federal rule requires that 5 ml aliquots be combined in a 25 mL syringe and well mixed before a 5 ml aliquot is withdrawn for introduction into the GC purging device. The federal rule also requires that the laboratory technician follow the sample introduction and purging steps described in the approved analytical method. Deviations from the steps that are prescribed in the approved method are not acceptable.

**Comment:** Samples which are composited cannot be screened for PCBs by Methods 505 or 508(a): If a laboratory can achieve the PCB MDLs listed in Appendix B utilizing the EPA-approved Methods 505 or 508, then the screening rule should apply as it does with the remaining compounds performed by these methods.

**Response:** The sample compositing rule requires that the method used to analyze a composite sample have a detection limit that is less than 1/5 of the MCL. Since there are no MCLs for the Aroclors of PCBs, sample compositing is not permitted when samples will be analyzed using EPA Methods 505 or 508.

**Comment:** The second sentence in R18-4-219(A) contradicts the section on detection limits for VOCs.

**Response:** ADEQ disagrees that there is a contradiction. The second sentence in R18-4-219(A) states that composite samples from a maximum of 5 samples are allowed provided the detection limit of the method used for analysis is less than one-fifth of the maximum contaminant level for the contaminant. The detection limit for

VOCs is 0.0005 mg/L. This concentration is less than one-fifth of the maximum contaminant level for each of the volatile organic chemicals prescribed in R18-4-212. Composite VOC samples are therefore allowed.

### **Lead and Copper Rules**

**Comment:** Why has ADEQ not incorporated EPA's Lead and Copper Rule Revisions (proposed April 12, 1996) in this section? EPA's June 7, 1991 rulemaking and ADEQ's current drinking water rules inadvertently omitted requirements for large water systems that could demonstrate optimal corrosion control equivalent to the rule's requirements. EPA's proposed rule corrects this omission by requiring these systems to monitor in the same manner as any other system that completes the rule's corrosion control steps. EPA is scheduled to promulgate the Lead and Copper Rule Revision in October, 1997. If ADEQ includes the language proposed by EPA in this rule revision, ADEQ will not be required to write yet another revised rule package. If ADEQ does not include the EPA rule revision language, would EPA once again become the regulating agency for Lead and Copper for large water systems that could demonstrate optimal corrosion control during initial lead and copper monitoring? While we realize that ADEQ does not normally propose a rule that is not final within EPA, based on scheduling it may be in ADEQ's best interest to incorporate this language in this rule package. EPA has closed its comment period, thus ADEQ has the opportunity to consult with EPA about their final rule language. This simple modification may eliminate the need for future rule making and fast track the schedule for large water system's reduced lead and copper monitoring.

**Response:** ADEQ will not incorporate proposed federal regulations that are not final into the state's drinking water rules. Proposed federal regulations are subject to change until they are promulgated as final rules. To retain primary enforcement authority over the drinking water program, ADEQ must adopt all new and revised National Primary Drinking Water Regulations [NPDWRs]. Complete requests for EPA approval of state program revisions to adopt new or revised NPDWRs must be submitted within 18 months after promulgation of *final* EPA regulations. Since EPA's Lead and Copper Rule revisions are not final, the 18-month time frame for submittal of state program revisions has not even started. It is premature to initiate a state rulemaking to adopt state drinking water program revisions that are based upon EPA's proposed rules which have not been finalized and are still subject to change. Also, ADEQ did not propose revisions to the lead and copper rules based on EPA's proposed rules in this rulemaking. ADEQ is concerned that the adoption of substantive revisions to the lead and copper rules may

constitute a substantial change to the rules which can only be made through supplemental rulemaking. ADEQ does not want to further delay the technical amendments to the drinking water rules to engage in supplemental rulemaking. No change to the rules.

**Comment:** In R18-4-307(D), omit the word "been" after "...small and medium water systems which are....."

**Response:** ADEQ deleted the word, "been," in R18-4-307(D).

## **Appendix B**

**Comment:** The proposed detection limits for radiochemicals pose a problem for Arizona water suppliers. The detection levels may be achievable in other parts of the country. However, Arizona waters typically pose problems in achieving these detection limits. High mineral contents in Arizona drinking waters cause laboratories to report higher reporting levels than required by the proposed detection limits. Historical analytical results from our compliance samples have been reported above the proposed detection limits because of this fact. If the proposed detection limits are accepted as rule, many water systems throughout Arizona will not be able to stay in compliance with R18-4-217.

**Response:** The adopted rules do not prescribe detection limits for radiochemicals. Instead, ADEQ prescribes reporting limits for radiochemicals at R18-4-104(U) in the adopted rules. ADEQ acknowledges that the reporting limits for radiochemicals are based upon current detection limits that are prescribed in federal regulations. ADEQ also agrees that high dissolved solids in drinking water samples can interfere with gross alpha and gross beta radioactivity measurements because drinking water samples with high sample solids content are likely to have high self-absorption which reduces the sensitivity of the gross alpha or gross beta radioactivity measurements. For gross alpha particle radioactivity, the problem of self-absorption from high sample solids has been addressed by the recent development of the co-precipitation method for the analysis of drinking water for gross alpha particle radioactivity [See Standard Method 7110C; see also 62 Federal Register 10170, March 5, 1997]. EPA recommends that the co-precipitation method be used for the analysis of drinking water samples with total dissolved solids greater than 500 mg/L. The co-precipitation method employs a chemical separation technique which eliminates the problem of self-absorption from high sample solids content, minimizes counting time, and provides greater sensitivity. ADEQ

adopted a reporting limit of 3 pCi/L for gross alpha particle radioactivity which is the same as the method detection limit for gross alpha particle radioactivity that is prescribed in federal regulations. ADEQ believes that drinking water testing laboratories can meet the prescribed reporting limit of 3 pCi/L for gross alpha using the co-precipitation method.

ADEQ adopted a reporting limit of 4 pCi/L for gross beta particle radioactivity. This reporting limit is based on the federal method detection limit for gross beta particle radioactivity. Only three types of public water systems are required to conduct monitoring for gross beta particle radioactivity: 1) surface water systems which serve more than 100,000 persons; 2) community water systems that ADEQ determines are subject to potential health risk from man-made radioactivity; and 3) community water systems which utilize water that may be contaminated by effluents from nuclear facilities. ADEQ believes that the few public water systems that are required to conduct gross beta particle radioactivity monitoring are currently able to meet the reporting limit of 4 pCi/L prescribed in the adopted rules. ADEQ will address the acceptability of compliance data for gross beta particle radioactivity on a case-by-case basis for the few public water systems that have problems with gross beta analyses of drinking water samples because of interference from elevated concentrations of dissolved and suspended solids.

**Comment:** Proposed changes to Appendix B state detection limits. ADEQ reporting forms state MDL. The EPA-approved methodologies for radiochemicals specify reporting a "Lower Limit of Detection" (LLD). Can this be clarified please?

**Response:** ADEQ deleted Appendix B from the adopted rules. The adopted rules do not prescribe any detection limits for radiochemicals. The comment is correct that ADEQ's Drinking Water Radiochemical Analysis Report form prescribes a method detection limit [MDL] value for gross alpha, combined radium, and gross beta particle radioactivity. This form needs to be corrected and references to "MDL Value" eliminated. Different conventions with different terminology have been used in federal rules and in the references to analytical methods. The federal regulations prescribe "method detection limits." The 19th edition of Standards Methods for the Examination of Water and Wastewater refers to the terms "Lower Limit of Detection" or the "minimum detectable activity" [MDA]. To eliminate confusion and the production of noncomparable data, ADEQ proposes to use the "Lower Limit of

Detection,” [LLD] as described in 19th edition of Standard Methods for the Examination of Water and Wastewater on its reporting forms instead of “MDL Value.”

**Comment:** Appendix B identifies analytical techniques for inorganic parameters but does not specify a method reference.

**Response:** ADEQ deleted Appendix B from the adopted rules. The adopted rules do not prescribe detection limits or specific analytical methods for inorganic parameters.

**Comment:** The detection limits listed in Appendix B are not consistent with detection limits defined in other parts of the rules.

**Response:** ADEQ repealed Appendix B. The adopted rules do not prescribe detection limits.

**11. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:** No.

**12. Incorporations by reference and their location in the rules:**

- a. American National Standards Institute / NSF International Standard 60, Drinking Water Treatment Chemicals - Health Effects, NSF International, 3475 Plymouth Road, P.O. Box 130140, Ann Arbor, Michigan [Revised November 1996] found in R18-4-119(A).
- b. American National Standards Institute / NSF International Standard 61, Drinking Water System Components - Health Effects, NSF International, 3475 Plymouth Road, P.O. Box 130140, Ann Arbor, Michigan [Revised July 1997] found in R18-4-119(B).

**13. Was this rule previously adopted as an emergency rule?** No.

**If so, indicate the Register citation:**

**14. The full text of the rules follows:**

**TITLE 18. ENVIRONMENTAL QUALITY**

**CHAPTER 4. DEPARTMENT OF ENVIRONMENTAL QUALITY**

**SAFE DRINKING WATER**

**ARTICLE 1. GENERAL REQUIREMENTS**

Section

- R18-4-101. Definitions
- R18-4-102. Applicability
- R18-4-103. ~~General~~ Recordkeeping Requirements
- R18-4-104. Reporting Requirements
- R18-4-105. ~~General~~ Public Notification Requirements
- R18-4-109. Sample Collection, Preservation, and Transportation
- R18-4-116. Emergency Operations Plans
- R18-4-117. Unsafe Supplies
- R18-4-119. Additives
- R18-4-121. Enforcement

**ARTICLE 2. MAXIMUM CONTAMINANT LEVELS AND MONITORING REQUIREMENTS**

Section

- R18-4-201. Maximum Contaminant Levels: Public Water Systems Affected
- R18-4-205. Inorganic Chemicals; MCLs
- R18-4-206. Monitoring Requirements for Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, ~~Nickel~~, Selenium, and Thallium
- R18-4-208. Nitrate; Monitoring Requirements
- R18-4-209. Nitrite; Monitoring Requirements
- R18-4-212. Volatile Organic Chemicals; Monitoring Requirements
- R18-4-213. Vinyl Chloride; Monitoring Requirements
- R18-4-215. Synthetic Organic Chemicals; MCLs
- R18-4-216. Synthetic Organic Chemicals; Monitoring Requirements

- R18-4-217. Radiochemicals; MCLs and Monitoring Requirements
- R18-4-218. Sampling Sites
- R18-4-219. Sample Compositing

**ARTICLE 3. TREATMENT TECHNIQUES**

Section

- R18-4-302. Filtration
- R18-4-303. Disinfection
- R18-4-307. Lead and Copper; Requirements for Small and Medium Water Systems
- R18-4-310. Lead and Copper; ~~Initial Tap Water Monitoring for Lead and Copper~~
- R18-4-311. Lead and Copper; ~~Initial Monitoring for Water Quality Parameters~~ Water Quality Parameter Monitoring
- R18-4-314. Lead and Copper; Source Water Monitoring and Treatment
- R18-4-316. Public Education Requirements for Lead

**ARTICLE 4. SPECIAL MONITORING REQUIREMENTS**

Section

- R18-4-402. Special Monitoring for Sodium
- ~~R18-4-403. Special Monitoring for water corrosivity characteristics~~
- R18-4-403. Special Monitoring for Nickel

**ARTICLE 5. MINIMUM DESIGN CRITERIA**

Section

- R18-4-504. Prohibition on the Use of Lead Pipe, Solder, and Flux

Appendix A Mandatory Health Effects Language

~~Appendix B Detection Limits~~

~~Appendix C~~ B Lead Public Education

## ARTICLE 1. GENERAL REQUIREMENTS

### R18-4-101. Definitions

The terms in this Chapter have the following meanings:

1. "Action level" means a concentration of 0.015 mg/L for lead or 1.3 mg/L for copper.
2. "Air-gap separation" means a physical separation between the discharge end of a supply pipe and the top rim of its receiving vessel, which has a separation distance equal to at least one inch or twice the diameter of the supply pipe, whichever is greater.
3. ~~"AWWA standard" means an official standard developed and approved by the American Water Works Association (AWWA).~~ "A.R.S." means Arizona Revised Statutes.
4. "Backflow" means a reverse flow condition, ~~which that~~ causes water or mixtures of water and other liquids, gases, or substances to flow back into the distribution system. Backflow can be created by a difference in water pressure (backpressure), a vacuum or partial vacuum (backsiphonage), or a combination of both.
5. "Backflow-prevention assembly" means ~~any assembly~~ a mechanical device used to prevent backflow.
6. "BAT" means best available technology.
7. "Best available technology" means a technology, treatment technique, or other means which has been identified by the U.S. Environmental Protection Agency (~~EPA~~) as being the best available for removing or reducing the concentration of a contaminant in water, taking costs into consideration, after examination for efficacy under field conditions and not solely under laboratory conditions.
8. "Certified operator" means a person who holds an operator certificate issued by the Department to operate a water treatment plant or a distribution system.
9. "Coagulation" means a treatment process ~~which that~~ uses coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.
10. "Community water system" means a public water system ~~which that~~ serves 15 or more service connections used by year-round residents or ~~which that~~ serves 25 or more year-round residents.
11. "Compliance cycle" means ~~a nine-calendar-year~~ 9-calendar year time frame during which a public water system is required to monitor. Each compliance cycle consists of ~~three 3~~ three 3 compliance periods. The first

compliance cycle ~~begins~~ began January 1, 1993, and ends December 31, 2001. The second compliance cycle begins January 1, 2002, and ends December 31, 2010. The third compliance cycle begins January 1, 2011, and ends December 31, 2019.

12. "Compliance period" means a ~~three-calendar-year~~ 3-calendar year time frame within a compliance cycle. Within the first compliance cycle, the first compliance period ~~begins~~ began January 1, 1993, and ~~ends~~ ended December 31, 1995. The second compliance period ~~begins~~ began January 1, 1996, and ends December 31, 1998. The third compliance period begins January 1, 1999, and ends December 31, 2001.
13. "Consecutive public water system" means a public water system ~~which~~ that obtains all of its water from another public water system that is regulated by the Department.
14. "Contaminant" means any physical, chemical, biological, ~~microbiological~~, or radiological substance in water.
15. "Conventional filtration" means a series of treatment processes, including coagulation, flocculation, sedimentation, and filtration that result in substantial particulate removal.
16. "Corrosion inhibitor" means a substance ~~capable of reducing the corrosivity of water toward~~ that reduces corrosion of metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.
17. "Cross connection" means a physical connection between a public water system and any source of water or other substance ~~which~~ that may lead to contamination of the water provided by the public water system through backflow.
18. "CWS" means community water system.
- ~~19.~~ "Department" means the Arizona Department of Environmental Quality.
- ~~20~~ 19. "Detected" means measured in ~~the~~ a laboratory at a concentration ~~which~~ that is at or above the method detection limit ~~for a given contaminant~~.
- ~~21~~ 20. "Diatomaceous earth filtration" means a treatment process that results in substantial particulate removal in which a pre-coat cake of diatomaceous earth filter media is deposited on a support membrane ~~known as a~~ septum (septum) and, while the water is filtered through the cake on the septum, additional filter media ~~known as body feed are~~ (body feed) is continuously added to the feed water to maintain the permeability of

the filter cake.

- 22 21. "Direct filtration" means a series of treatment processes, including coagulation and filtration but excluding sedimentation, that result in substantial particulate removal.
- 23 22. "Disinfectant" means ~~any an~~ oxidant, including ~~but not limited to~~ chlorine, chlorine dioxide, chloramines, ozone, or ~~any an~~ equivalent agent or process such as ultraviolet light, that ~~is intended to kill or inactivate~~ kills or inactivates pathogenic organisms.
- 24 23. "Disinfection" means a treatment process that ~~is intended to kill or inactivate~~ kills or inactivates pathogenic organisms in water by oxidants, ultraviolet light, or equivalent agents.
- 25 24. "Distribution system" means the pipelines, appurtenances, devices, and facilities of a public water system which conduct water from a source or water treatment plant to persons served by the system.
- 26 25. "Domestic or other non-distribution system plumbing problem" means a total coliform contamination problem in a public water system with more than one service connection that is limited to a specific service connection from which a total coliform-positive sample is taken.
- 27 26. "Dose equivalent" means the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements.
- 28 27. "Double check valve assembly" means a backflow-prevention assembly ~~that contains at least~~ composed of two independently acting check valves with tightly closing, resilient-seated shut-off valves on each end of the assembly and properly located, resilient-seated test cocks.
- 29 28. "Effective corrosion inhibitor residual" means a concentration of a corrosion inhibitor that is sufficient to form a passivating protective film on the interior walls of a pipe.
- 30 29. "Exclusion" means a waiver granted by the Department under R18-4-112 from a requirement ~~established by~~ of this Chapter that is not a requirement contained in the National Primary Drinking Water Regulations ~~which may be granted pursuant to R18-4-112.~~
- 31 30. "Exemption" means ~~the allowance of a temporary deviation from a maximum contaminant level or a treatment technique requirement established by this Chapter which may be granted pursuant to R18-4-111~~ a temporary deviation from a maximum contaminant level or treatment technique required by

this Chapter that is granted by the Department under R18-4-111.

- 32 31. "Filtration" means a treatment process for removing particulate matter from water by passage through porous media.
- 33 32. "First-draw sample" means a ~~one-liter~~ 1-liter sample of tap water, collected in accordance with R18-4-310(D) ~~that has been standing in plumbing pipes for at least six 6 hours and is collected without flushing the tap.~~
- 34 33. "Flocculation" means a treatment process to enhance agglomeration or collection of smaller floc particles into larger and more easily settleable particles through gentle stirring by hydraulic or mechanical means.
- 35 34. "GAC" means granular activated carbon.
- 36 35. "GC" means gas chromatography.
- 37 36. "GC/MS" means gas chromatography/mass spectrometry.
- 38 37. "Gross alpha particle activity" means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.
- 39 38. "Gross beta particle activity" means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.
- 40 39. "Groundwater system" means a public water system that is supplied solely by groundwater that is not under the direct influence of surface water.
- 41 40. "Groundwater under the direct influence of surface water" means any water beneath the surface of the ground with:
- a. A significant occurrence of insects or other macroorganisms, algae, large diameter pathogens such as *Giardia lamblia*, or total coliform; or

- b. Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH ~~which that~~ closely correlate to climatological or surface water conditions.
- ~~42~~ 41. "Halogenated" means treated or mixed with chlorine, bromine, or iodine.
- ~~43~~ 42. "HPC" means heterotrophic plate count.
- ~~44~~ 43. "Initial compliance period" means the first, full ~~three-year~~ 3-year compliance period in a compliance cycle that a public water system conducts initial monitoring.
44. "Initial monitoring year" means the calendar year designated by the Department within a compliance period in which a public water system conducts initial monitoring at a point of entry.
45. "Large water system" means a public water system that serves more than 50,000 persons.
46. "Lead-free" means that the pipe, solder, or flux used in the installation or repair of any public water system or in ~~any residential or nonresidential~~ a user facility ~~which that~~ provides water for human consumption and which is connected to such public water system meets the following criteria:
- a. All solders and flux contain not more than 0.2 % lead;
  - b. All pipes and pipe fittings contain not more than 8.0 % lead.
47. "Lead service line" means a service line made of lead ~~which that~~ connects a water main to a building inlet and any lead pigtail, gooseneck, or fitting ~~which that~~ is connected to the service line.
48. "Log" means, ~~in terms of the percentage~~ removal or inactivation of *Giardia lamblia* cysts or viruses, ~~the following as follows:~~
- a. "One-log" is 90 %.
  - b. "Two-log" is 99 %.
  - c. "Three-log" is 99.9 %.
  - d. "Four-log" is 99.99 %.
49. "Man-made beta particle and photon emitters" means all radionuclides emitting beta particles or photons, except the daughter products of Thorium-232, Uranium-235, and Uranium-238, listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," Handbook 69, U.S. Department of Commerce, National Bureau of Standards, amended as of August, 1963) (and no future editions), which is incorporated by reference and on file with

the Office of the Secretary of State and the Department. Copies of Handbook 69 are also available from the Library of Congress by telephoning (202) 707-5640.

50. "Maximum contaminant level" means the maximum permissible level for a contaminant in drinking water ~~which that~~ is delivered to any person who is served by a public water system.
51. "Maximum total trihalomethane potential" means the maximum concentration of total trihalomethanes produced in water containing a disinfectant residual after ~~seven~~ 7 days at a temperature of 25E C or above.
52. "MCL" means maximum contaminant level.
53. "MFL" means million fibers per liter greater than ten microns in length.
54. "Medium water system" means a public water system that serves more than 3,300 persons and 50,000 or fewer persons.
55. "Millirem" means 1/1000 of a rem.
56. "MTP" means maximum total trihalomethane potential.
57. "Nephelometric turbidity unit" means the unit of measure for turbidity. Turbidity is a measure of light scatter or absorption caused by suspended or colloidal matter in water. Turbidity is measured as an indicator of ~~treatment effectiveness, specifically for clarification and filtration processes~~ the effectiveness of filtration treatment.
58. "Noncommunity water system" means a public water system that is ~~not a community water system. A noncommunity water system is~~ either a nontransient, noncommunity water system or a transient, noncommunity water system.
59. "Nontransient, noncommunity water system" means a public water system ~~which that~~:
  - a. Serves 15 or more service connections that are used by the same persons for at least ~~six~~ 6 months per year; or
  - b. Serves the same 25 or more persons for at least ~~six~~ 6 months per year.
60. "NTNCWS" means nontransient, noncommunity water system.
61. "NTU" means nephelometric turbidity unit.
62. "Optimal corrosion control treatment" means the corrosion control treatment that minimizes lead and copper concentrations at the tap without violating any rule prescribed in this Chapter.

63. "OX" means chlorine or ozone oxidation.
64. "pCi" means picocurie.
65. "Picocurie" means the quantity of radioactive material producing 2.22 nuclear transformations per minute.
66. "Point-of-entry into the distribution system" means the point at which water is discharged into the distribution system from a well, storage tank, pressure tank, or water treatment plant.
67. "Point-of-entry treatment device" means a device ~~which~~ that applies ~~physical or chemical~~ treatment to drinking water entering a ~~user's premises~~ house or building for the purpose of reducing contaminants in the drinking water that is distributed throughout the ~~premises~~ house or building.
68. "Point-of-use treatment device" means a device ~~which~~ that applies ~~physical or chemical~~ treatment to the drinking water flowing to a single tap ~~for the purpose of reducing~~ to reduce contaminants in drinking water at that ~~one~~ single tap.
69. "Pressure vacuum breaker assembly" means a ~~backflow-prevention~~ backsiphonage prevention assembly that contains ~~one or two~~ an independently operated, internally loaded check ~~valves~~ valve; an internally operated air-inlet valve located on the discharge side of the check valve; ~~with~~ tightly closing resilient seated shut-off valves on each end of the check valve assembly; and properly located resilient seated test cocks.
70. "Private agricultural water system" ~~means a water system which:~~
- ~~a. Is owned and operated as part of an agricultural enterprise;~~
  - ~~b. Has less than 15 service connections or serves less than 25 persons on the real property of the agricultural enterprise;~~
  - ~~c. Serves only the owner, employees, and their dependents residing on the real property of the agricultural enterprise;~~
  - ~~d. Does not sell water for domestic purposes; and~~
  - ~~e. Does not hold out, offer, or provide water to the public at large. has the same meaning as prescribed in A.R.S. §49-352(I)(1).~~
71. "PTA" means packed tower aeration.
72. "Public water system" means a system for the distribution of water to the public for human consumption ~~which~~ that serves 15 or more service connections or ~~which serves~~ an average of at least 25 persons per day

for at least 60 days a year. A public water system includes:

- a. Any collection, treatment, storage, and distribution ~~facilities~~ facility under the control of the ~~operator of such system~~ water supplier and used in connection with ~~such~~ the system; and
- b. Any collection or pretreatment storage ~~facilities~~ facility not under ~~such~~ the control of ~~the water supplier~~ which are that is used with ~~such~~ the system.

A public water system is either a community water system; a nontransient, noncommunity water system; or a transient, noncommunity water system.

73. "Reduced pressure principle backflow-prevention assembly" means a backflow-prevention assembly ~~which includes not less than two~~ that contains 2 independently acting check valves; ~~an automatically operated, differential~~ a hydraulically operating, mechanically independent pressure differential relief valve located between the ~~two~~ 2 check valves; ~~with~~ tightly closing, resilient seated shut-off valves on each end of the check valve assembly; and properly located resilient seated test cocks.
74. "Rem" means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system.
75. "Repeat compliance period" means any subsequent compliance period after the initial compliance period.
76. "Residual disinfectant concentration" means the concentration of disinfectant measured in mg/L in a representative sample of water.
77. "Sanitary survey" means an on-site review of the water source, facilities, equipment, operation, and maintenance of a public water system ~~for the purpose of evaluating the adequacy of such source, facilities, equipment, operation, and maintenance for producing and distributing~~ to evaluate their adequacy to produce and distribute safe drinking water.
78. "Sedimentation" means a treatment process ~~which~~ that holds water in a low-flow condition before filtration ~~and which removes~~ to remove solids by gravity or separation.
79. "Semipublic water system" means a ~~water~~ system for the distribution of water to the public for human consumption with at least ~~four~~ 4 service connections ~~and but~~ less than 15 service connections ~~which~~ that:
  - a. Serves an average of less than 25 persons per day; or
  - b. Serves an average of 25 or more persons a day but for less than 60 days a year.

80. "Service connection" means a location at the meter, or in the absence of a meter, at the curbsto~~p~~ or at the building inlet.
81. "Service line" means the water line ~~which that~~ runs from the corporation stop at a water main to the building inlet, including any pigtail, gooseneck, or fitting.
82. "Service line sample" means a ~~one-liter sample of water,~~ first draw sample collected in accordance with R18-4-310(D); ~~that has been standing for at least six hours in a service line.~~
83. "Single-family structure" means a building constructed as a single-family residence that is ~~currently~~ used as a residence or as a place of business.
84. "Slow sand filtration" means a treatment process which involves the passage of raw water through a bed of sand at low velocity, generally less than 0.4 m/h, that results in substantial particulate removal by physical and biological mechanisms.
85. "Small water system" means a public water system that serves 3,300 or fewer persons.
86. "SOC" means synthetic organic chemical.
87. "Source" means ~~any a~~ body of water above or below the ground ~~from which a water supply is obtained that~~ supplies water to a public water system, including ~~any a~~ well, spring, or surface water.
88. "Standard sample" means the aliquot of finished drinking water that is examined for the presence of coliform bacteria. The standard sample volume is 100 milliliters.
89. "Surface water" means ~~any a~~ source that is exposed to the unenclosed atmosphere and ~~that is~~ subject to surface runoff.

90. "Surface water system" means a public water system that uses surface water or groundwater under the direct influence of surface water, in whole or in part, as a source.
91. "TNCWS" means a transient, noncommunity water system.
- ~~91~~ 92. "Total trihalomethanes" means the sum of the concentrations of the following trihalomethane compounds: trichloromethane (chloroform), dibromochloromethane, bromo-dichloromethane and tribromomethane (bromoform).
- ~~92~~ 93. "Transient, noncommunity water system" means a public water system ~~which~~ that:
- a. Serves 15 or more service connections but ~~which~~ does not serve 15 service connections used by the same persons for more than ~~six~~ 6 months per year; or
  - b. Serves an average of at least 25 persons per day for at least 60 days per year but ~~which~~ does not serve the same 25 persons for more than ~~six~~ 6 months per year.
- ~~93~~ 94. "Treatment" means ~~to intentionally change a process that changes~~ the quality of water by a physical, chemical, or biological ~~process means.~~
95. "Treatment technique" means a treatment procedure that has been promulgated by EPA in lieu of a maximum contaminant level. Treatment techniques include the requirements for filtration, disinfection, lead, copper, acrylamide, and epichlorohydrin that are prescribed in Article 3 of this Chapter.
- ~~94~~ 96. "Trihalomethane" means one of the family of organic compounds, named as derivatives of methane, wherein ~~three of the four~~ 3 of 4 hydrogen atoms in methane are substituted by a halogen atom in the molecular structure.
- ~~95~~ 97. "TTHM" means total trihalomethanes.
- ~~96~~ 98. "User facilities" means ~~the aggregate of all facilities (e.g., buildings, appurtenances, equipment, manufacturing and storage facilities, and water distribution pipes)~~ on the user's customer's side of the service connection.
- ~~97.~~ ~~"Variance" means the allowance of a deviation from either a maximum contaminant level or a treatment technique which may be granted pursuant to R18-4-110.~~
- ~~98~~ 99. "Virus" means an enteric virus which is infectious to humans by waterborne transmission.
- ~~99~~ 100. "VOC" means volatile organic chemical.

~~100~~101. "Water main" means ~~any pipe which~~ a pipe that is used to distribute ~~potable drinking water which~~ that serves more than one property ~~or residence~~ and is exterior to buildings.

~~101~~102. "Water supplier" means a person who owns or ~~operates~~ who supervises or directs the operation of a public water system.

~~102~~103. "Waterborne disease outbreak" means the occurrence of ~~acute infectious illness which~~ that is epidemiologically associated with the ingestion of drinking water from a public water system.

103 "Water system" means:

~~\_\_\_\_\_ a. \_\_\_\_\_ Any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used in connection with such system; and~~

~~\_\_\_\_\_ b. \_\_\_\_\_ Any collection or pretreatment storage facilities not under such control which are used with such system for the distribution of water to the public for human consumption or for any of the following purposes: producing, processing, storing, handling, serving, or transporting food or drink and the washing of related utensils, equipment or food contact surfaces; bathing or personal hygiene; or washing clothes. A water system does not include a system which delivers water solely for irrigation purposes.~~

104. "Water treatment plant" means a facility in which the quality of the water is intentionally changed by a physical, chemical, or biological process. A booster chlorination facility which is designed to maintain an effective disinfectant residual in water in the distribution system is not a water treatment plant.

#### **R18-4-102. Applicability**

A. The rules in this Chapter apply to public water systems.

B. The rules in this Chapter do not apply to semipublic water systems or to private agricultural water systems, unless ~~a health hazard is identified~~ the Department identifies a health hazard. The Director may take enforcement action to require that a semipublic water system or a private agricultural water system comply with a rule prescribed in this Chapter to safeguard the health of users of the system. The Director shall identify, in writing, the health hazard ~~which~~ that provides grounds for initiation of any enforcement action.

C. The rules in this Chapter do not apply to a public water system that meets all of the following criteria:

1. The public water system consists only of distribution and storage facilities and does not have any collection or treatment facilities;
2. The public water system obtains all of its water from, but is not owned or operated by, another public water system that is regulated under this Chapter;
3. The public water system does not sell<sup>π</sup>—water to any person; and
4. The public water system is not a carrier ~~which~~ that conveys passengers in interstate commerce.

D. The rules in this Chapter do not apply to a public water system for a mobile home park that meets all of the following criteria:

1. The public water system for the mobile home park consists only of distribution and storage facilities and does not have collection or treatment facilities;
2. The public water system for the mobile home park obtains all of its water from, but is not owned or operated by, another public water system that is regulated under this Chapter;
3. The public water system for the mobile home park does not sell water to any person. For purposes of this subsection, submetering by a mobile home park to determine the quantity of water used by individual park tenants shall not be considered to be selling water, provided the submetering is for purposes of water conservation.

~~<sup>π</sup>—Submetering by a mobile home park to determine the quantity of water used by individual park tenants shall not be considered to be selling water, provided the submetering is for purposes of water conservation.~~

**R18-4-103. General Recordkeeping Requirements**

- A. A water supplier shall retain on the premises of a public water system or at a convenient location near its premises, the following records for the following minimum periods of time:
1. Records of bacteriological analyses, including records of analyses for total coliform, fecal coliform, *Escherichia coli* (*E. coli*), and heterotrophic bacteria. ~~Records of bacteriological analyses shall be kept for at least five years~~ for 5 years.
  2. Records of chemical analyses, ~~which shall be kept for at least ten~~ for 10 years.
  3. Records of actions taken by the water supplier to correct violations of this Chapter, ~~which shall be~~

~~kept for at least three~~ for 3 years after the last action taken with respect to the particular violation involved; to correct the violation.

4. Records concerning ~~variances or exemptions~~ a variance or exemption granted to the public water system ~~shall be kept for at least five~~ for 5 years after the expiration of ~~such~~ the variance or exemption.
5. Copies of written reports, summaries, or communications relating to ~~sanitary surveys~~ a sanitary survey of the public water system. ~~Records related to a sanitary survey shall be kept for at least ten~~ for 10 years after completion of the sanitary survey ~~involved.~~
6. ~~Any public water system that is subject to the requirements of the lead and copper rules prescribed at R18-4-305 through R18-4-316 shall retain original records~~ Records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, Department determinations, and any other information required by R18-4-305 through ~~R18-4-316.~~ ~~Each public water system shall retain the records for at least~~ for 12 years.
7. A water supplier of a surface water system shall retain the following records for ~~at least ten~~ 10 years:
  - a. Records of turbidity measurements, including the number and percentage of filtered water turbidity measurements taken during the month ~~which that~~ that are less than or equal to the turbidity limits specified in ~~this Section~~ R18-4-302 for the filtration technology ~~being~~ used.
  - b. The date and value of any turbidity measurement taken during ~~the~~ a month ~~which that~~ that exceeds ~~five~~ 5 NTUs.
8. ~~A water supplier of a surface water system shall retain the following records for at least ten~~ years:

- a. ~~c.~~ Records of the lowest residual disinfectant concentration (in mg/L) in water entering the distribution system for each day that each water treatment plant ~~is operating~~ operates;
- b. ~~d.~~ Records of the residual disinfectant concentration (in mg/L) in water for each sampling site in the distribution system;
- c. ~~e.~~ Records of analyses for heterotrophic bacteria if HPC is measured ~~in lieu~~ instead of residual disinfectant concentration in the distribution system.

B. ~~When records of laboratory analyses are required to be maintained, a~~ A water supplier shall keep the ~~actual~~ original laboratory reports of drinking water analyses or copies of Department-approved reporting forms.

**R18-4-104. Reporting Requirements**

A. Routine monitoring ~~to determine compliance with MCLs~~: Except as specified in this subsection, a water supplier shall report the ~~results~~ result of any test measurement or analysis required by Article 2 ~~of this Chapter~~ to the Department within the first ~~ten~~ 10 days following the month ~~in which the result is received~~ that the water supplier receives the analytical result or the first ~~ten~~ 10 days following the end of a ~~required~~ an applicable monitoring period prescribed by ~~the Department~~ Article 2, whichever is less.

1. Fecal coliform / E coli: If any routine or repeat sample for total coliform is positive, the water supplier shall have the total coliform-positive sample analyzed to determine if fecal coliforms are present, except that the water supplier may test for E. coli instead of fecal coliforms. If fecal coliforms or *E. coli* are present in a total coliform-positive sample, a water supplier shall report the positive results to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receiving notice of the fecal coliform-positive or *E. coli*-positive test result.
2. If nitrate is present in a sample in a concentration which exceeds 10 mg/L, then a water supplier shall report the exceedance to the Department within 24 hours of receipt of analytical results which indicate the exceedance. Nitrate: If monitoring results indicate an exceedance of the MCL for nitrate in a routine sample, a water supplier is required by R18-4-208(I) to take a confirmation sample within 24 hours of receipt of the analytical results. A water supplier shall report the MCL exceedance to the Department by telephone or facsimile, within 24 hours of receipt of the

analytical results.

3. Total trihalomethanes: A water supplier shall report the arithmetic average of analytical results for total trihalomethanes within 30 days of receipt of the last analytical results of the previous quarter.

B. MCL violations: Except as specified in this subsection, a water supplier shall report a violation of ~~any maximum contaminant level~~ a MCL to the Department within 48 hours of receipt of analytical results ~~which that~~ indicate a violation.

1. A water supplier shall report a violation of a ~~maximum contaminant level~~ MCL for total coliform to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of analytical results ~~which that~~ indicate a violation.
2. A water supplier shall report a violation of a ~~maximum contaminant level~~ MCL for nitrate or nitrite to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of analytical results ~~which confirm for the confirmation sample that confirms a~~ violation.
3. A water supplier shall report a violation of an interim ~~maximum contaminant level~~ MCL for turbidity to the Department, by telephone or facsimile, ~~as follows:~~
  - a. ~~If Within the first 10 days following the end of the month if~~ the arithmetic average of the analytical results of daily samples taken during the month exceeds ~~one 1~~ 1 NTU, ~~then the water supplier shall report the violation to the Department within the first ten days following the end of the month.~~
  - b. ~~If Within 48 hours of receipt of analytical results for the second daily sample if~~ the arithmetic average of the results of daily samples taken on ~~two 2~~ 2 consecutive days exceeds ~~five 5~~ 5 NTUs, ~~then the water supplier shall report the violation to the Department within 48 hours of receipt of analytical results.~~

C. ~~Filtration reporting requirements:~~ Except as provided in subsection (C)(4), a water supplier of a surface water system ~~which that~~ provides filtration shall report the following turbidity measurements to the Department within ~~ten~~ 10 days after the end of each month for each water treatment plant that ~~is operating~~ operates during the month:

1. The total number of filtered water turbidity measurements taken during the month;
2. The number and percentage of filtered water turbidity measurements taken during the month ~~which~~ that are less than or equal to the turbidity limits prescribed in R18-4-302 for the filtration technology ~~being~~ used;
3. The date and value of any filtered water turbidity measurement taken during the month that exceeds ~~five~~ 5 NTUs.
4. If the turbidity of the filtered water exceeds ~~five~~ 5 NTUs, then the water supplier shall report the exceedance to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after the exceedance.

D. ~~Disinfection reporting requirements:~~ Except as provided in subsection (D)(4), a water supplier of a surface water system ~~which that~~ provides disinfection shall report the following information to the Department within ~~ten~~ 10 days after the end of each month for each water treatment plant that ~~is operating~~ operates during the month:

1. For each day, the lowest measurement of residual disinfectant concentration in mg/L in water entering the distribution system;
2. The date and duration of each time period ~~during which~~ the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/L; and ~~the date and time that the~~ Department was notified of the occurrence.
3. The value of "V" calculated by the formula prescribed in R18-4-303(C)(2) for the current and previous month ~~the surface water system serves water to the public.~~
4. ~~If, at any time,~~ the residual disinfectant concentration falls below 0.2 mg/L in water entering the distribution system, the water supplier shall report the occurrence to the Department as soon as possible, but no later than 24 hours after the occurrence. The water supplier ~~also~~ shall report

whether the residual disinfectant concentration was restored to at least 0.2 mg/L within ~~four~~ 4 hours.

- E. ~~Reporting requirements for tap~~ Tap water monitoring for lead and copper ~~under R18-4-310~~: Each ~~large, medium, or small~~ public water system ~~which is required to conduct tap water monitoring that monitors~~ for lead and copper pursuant to R18-4-310 shall report to the Department the information specified below ~~for all tap water samples~~ within the first ~~ten~~ 10 days following the end of each ~~six-month~~ monitoring period:
1. The results of all tap water samples, ~~for lead and copper including~~ the location of each sample site, and the criteria ~~under which the site was selected~~ used to select the site for the system's sampling pool;
  2. A certification by the water supplier that each first-draw sample ~~collected by the water system is one-liter~~ 1-liter in volume and, to the best of ~~their~~ the water supplier's knowledge, ~~has~~ stood motionless in the service line, or in the interior plumbing of a sampling site, for at least ~~six~~ 6 hours. If a resident collected a tap water sample, the water supplier shall certify that the sample was collected after the water supplier informed the resident of the proper sampling procedures.
  - ~~3. Where residents collected samples, a certification that each tap sample collected by the residents was taken after the water system informed them of the proper sampling procedures;~~
  - ~~4.3.~~ 3. The 90th percentile lead and copper concentrations ~~measured from among~~ for all lead and copper tap water samples collected during each monitoring period (as calculated in accordance with R18-4-308);
  - ~~5.4.~~ 4. With the exception of initial tap water monitoring for lead and copper, the system shall identify any site ~~which was not sampled during previous monitoring periods, and include an explanation of why sampling sites have changed;~~ A list of sampling sites that were not sampled in the previous monitoring period and an explanation for the change in sampling sites.
  - ~~6.~~ 5. By the applicable date for commencement of tap water monitoring, each CWS which does not complete its sampling pool with Tier 1 sampling sites meeting the targeting criteria specified in R18-4-309(A)(1) shall submit a justification of its selection of Tier 2 or Tier 3 sampling sites to the Department. The justification shall be made on a form that is approved by the Department.

- ~~7. By the applicable date for commencement of tap water monitoring, each NTNCWS which does not complete its sampling pool with Tier 1 sampling sites meeting the targeting criteria specified in R18-4-309(A)(2) shall submit a justification of its selection of Tier 2 sampling sites to the Department. The justification shall be made on a form that is approved by the Department.~~
- ~~8. By the applicable date for commencement of tap water monitoring, each water system with lead service lines that is not able to locate the number of sites served by such lines required under R18-4-309(A)(4) shall submit a justification to the Department which explains why it was unable to locate a sufficient number of sites served by lead service lines. The justification shall be made on a form that is approved by the Department.~~
- 9.5. A large, medium, or small water system which collects sampling data in addition to the minimum required by R18-4-309 shall report the analytical results from any additional samples to the Department within ten days following the end of the six-month monitoring period during which the samples are collected. Tap water monitoring data that is collected in addition to the minimum required by R18-4-310.

F. Sampling pools for tap water monitoring: A public water system that conducts tap water monitoring for lead and copper is required to identify a pool of sampling sites pursuant to R18-4-309. A water supplier shall submit the following information on a Department form by the date of commencement of tap water monitoring:

1. Each CWS that does not complete its sampling pool with Tier 1 sampling sites meeting the criteria specified in R18-4-309(A)(1) shall submit a justification of its selection of Tier 2 or Tier 3 sampling sites.
2. Each NTNCWS that does not complete its sampling pool with Tier 1 sampling sites meeting the criteria specified in R18-4-309(A)(2) shall submit a justification of its selection of Tier 2 sampling sites to the Department.
3. Each CWS or NTNCWS with lead service lines that is not able to locate the number of sites served by such lines required under R18-4-309(A)(4) shall submit a justification to the Department that explains why it is unable to locate a sufficient number of sites served by lead service lines.

F.G. Reporting requirements for water quality parameter monitoring under R18-4-311 Water quality parameter monitoring: Each large, medium, or small public water system which is required to conduct monitoring that monitors for water quality parameters pursuant to R18-4-311 shall report the following information to the Department within the first ~~ten~~ 10 days ~~following~~ after the end of a ~~six-month~~ monitoring period:

1. The results of all tap water samples for pH, alkalinity, calcium, conductivity, ~~and~~ water temperature and where applicable, orthophosphate or silica collected pursuant to R18-4-311(B);
2. The results of all source water ~~quality parameter~~ samples for pH, alkalinity, calcium, conductivity, and where applicable, orthophosphate or silica, collected at sampling points ~~as~~ prescribed by R18-4-218.
3. A large, medium, or small ~~water system which collects sampling data on water quality parameters in addition to the minimum required by R18-4-311 shall report the analytical results from any additional water quality parameter samples to the Department within ten days following the end of the six-month monitoring period during which the samples are collected~~ The results of any water quality parameter samples collected in addition to the minimum required by R18-4-311.

G.H. Reporting requirements for source water monitoring for lead and copper under R18-4-314 Source water monitoring for lead and copper: Each large, medium, or small public water system which is required to conduct source water monitoring that monitors source water for lead and copper pursuant to R18-4-314 shall report the following information to the Department within the first 10 days after the end of the monitoring period:

1. A water system shall report the sampling results for all source water samples within the first ten days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle); The results of all source water samples,
2. ~~With the exception of the first round of source water monitoring, a water system shall identify any site which was not sampled in previous monitoring periods and include an explanation of why the sampling site was changed;~~ A list of any sampling sites that were not sampled in the previous monitoring period and an explanation for the change in sampling sites, and
3. ~~For systems which exceed an action level for lead or copper, the system's recommendation~~

regarding source water treatment; and

- ~~4.~~ For systems required to install source water treatment, a letter certifying that the system has completed installing the treatment designated or approved by the Department within 24 months after the Department designates or approves the treatment.
- ~~5.3.~~ A large, medium, or small water system which collects source water samples for lead and copper in addition to the minimum required by R18-4-314 shall report the analytical results from any additional source water samples to the Department within ten days following the end of the six-month monitoring period during which the samples are collected The results of any source water samples collected in addition to the minimum required by R18-4-314.

I. Source water treatment: A water supplier shall report the following information to the Department within the following minimum time periods:

1. Within 6 months after a public water system exceeds an action level for lead or copper, the water supplier shall submit a letter to the Department that makes a recommendation regarding installation and operation of source water treatment. If the water supplier demonstrates that source water treatment is not necessary to minimize lead or copper levels at taps, the water supplier may recommend that no source water treatment be installed.
2. If the Department determines that source water treatment is necessary under R18-4-314(E), the water supplier shall submit a letter that certifies that the public water system has installed the source water treatment designated or approved by the Department within 24 months after receipt of a written determination by the Department that source water treatment is necessary.

H.J. Reporting requirements for lead service line replacement under R18-4-315 Lead service line replacement:

A public water system ~~which~~ that is required to replace lead service lines pursuant to R18-4-315 shall report the following information to the Department:

- ~~1.~~ Within 12 months after a system exceeds an action level for lead after installation of corrosion control or source water treatment, the system shall demonstrate in writing to the Department that it has conducted a materials evaluation to identify the initial number of lead service lines in its

distribution system, and shall provide the Department with the system's schedule for replacing annually at least 7% of the initial number of lead service lines in its distribution system.

~~2. Within 12 months after a system exceeds the action level for lead after installation of corrosion control treatment or source water treatment, and every 12 months thereafter, the system shall demonstrate to the Department in writing that the system has either:~~

~~a. Replaced in the previous 12 months at least 7% of the initial lead service lines [or a greater number of lead service lines specified by the Department under R18-4-315(F)], or~~

~~b. Conducted sampling which demonstrates that the lead concentration in each lead service line sample is less than or equal to 0.015 mg/L. In such cases, the total number of lines replaced shall equal at least seven percent of the initial number of lead lines in place at the time the lead service line replacement program begins (or the percentage specified by the Department under R18-4-315(F)).~~

1. If a public water system exceeds the action level for lead after installation of corrosion control or source water treatment, the water supplier shall, within 12 months after the system exceeds the action level for lead, submit the following information to the Department:

a. A report that identifies the initial number of lead service lines in the distribution system and a schedule for the annual replacement of at least 7% of the initial number of lead service lines in the distribution system.

b. A letter that demonstrates that the public water system has either:

i. Replaced at least 7% of the initial number of lead service lines or a greater percentage of lead service lines specified by the Department under R18-4-315(F) in the previous 12 months, or

ii. Conducted sampling that demonstrates that the lead concentration in all lead service line samples from an individual service line are # 0.015 mg/L. If a public water system conducted lead monitoring of individual lead service lines, the letter shall document the number of lead service lines with lead concentrations that are # 0.015 mg/L and the number of lead service lines that

were replaced. The total number of lead service lines with lead concentrations that are  $\geq 0.015$  plus the number of lead service lines replaced shall equal at least 7% of the initial number of lead service lines or the larger percentage specified by the Department under R18-4-315(F).

2. The water supplier shall submit an annual letter to the Department which contains the following information:

- a. The number of lead service lines scheduled to be replaced during the previous year of the system's lead service line replacement program.
- b. The number and location of each lead service line replaced during the previous year of the system's lead service line replacement program.
- c. If measured, the lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling.

f.K. Reporting requirements under Article 4 Special monitoring: A water supplier ~~who is required to conduct that conducts~~ special monitoring ~~as prescribed in Article 4 of this Chapter~~, shall report the following information to the Department:

- ~~1. A water supplier who is required to conduct special monitoring that monitors for sulfate pursuant to R18-4-401 shall report the sulfate monitoring results to the Department within 30 days of receipt of the analytical results.~~
- ~~2. A water supplier who is required to conduct special monitoring that monitors for sodium pursuant to R18-4-402 shall report the sodium monitoring results to the Department within in the first ten 10 days of the month following after the month in which that the analytical results are were received. A water supplier shall notify the Arizona Department of Health Services [ADHS] and the local county health department of the sodium levels monitoring results by direct mail within three 3 months of receipt of the analytical results of sodium monitoring. A The water supplier shall send a copy of each notice required to be provided to ADHS and the local county health department shall be sent to the Department within ten 10 days of issuance.~~
- ~~3. A water supplier who is required to conduct special monitoring for water corrosivity~~

characteristics pursuant to R18-4-403 shall report the water corrosivity characteristics monitoring results to the Department within the first 10 days of the month following the month in which analytical results are received.

~~4.3.~~ A water supplier ~~who is required to conduct special monitoring that monitors~~ for unregulated volatile organic chemicals ~~[VOC]~~ VOCs pursuant to R18-4-404 shall report the ~~unregulated VOC monitoring analytical~~ results to the Department within 30 days of receipt of ~~the~~ analytical results.

~~5.4.~~ A water supplier ~~who is required to conduct special monitoring that monitors~~ for unregulated synthetic organic chemicals ~~[SOC]~~ SOC<sub>s</sub> pursuant to R18-4-405 shall report the ~~unregulated SOC monitoring analytical~~ results to the Department within 30 days of receipt of ~~the~~ analytical results. A CWS or NTNCWS shall complete initial monitoring and report the unregulated SOC monitoring results to the Department by December 31, 1995.

~~J.L.~~ Failure to comply with monitoring requirements: A water supplier shall report the failure to comply with any monitoring requirement prescribed in this Chapter ~~to the Department~~ within 48 hours except that a public water system ~~which that~~ fails to comply with a total coliform monitoring requirement shall report the monitoring violation to the Department within ~~ten~~ 10 days of discovery.

~~K.M.~~ Cross connection incidents: A water supplier shall submit a written cross connection incident report to the Department and the local county health department within ~~five business~~ 5 days ~~to the Department and the local health authority whenever~~ of the occurrence of a cross connection problem ~~has occurred which resulted that results~~ in contamination of water provided by the public water system. The report shall address all of the following:

1. Date and time of discovery of the ~~unprotected~~ cross connection;
2. Nature of the cross connection ~~problem~~;
3. Affected area;
4. Cause of the cross connection ~~problem~~;
5. Public health ~~impacts~~ impact;
6. ~~Dates and texts of any public health advisories~~ Date and text of any public health advisory issued;
7. ~~Corrective actions~~ action taken; and

8. Date of completion of corrective ~~actions~~ action.

E.N. Emergencies: A water supplier shall notify the Department, by telephone, as soon as possible but no later than 24 hours after the occurrence of any of the following emergencies:

1. Loss of ~~source of the~~ water supply from a source,
2. Loss of water supply due to major component failure,
3. Damage to power supply equipment or loss of power,
4. Contamination of water in the distribution system ~~as a result of~~ from backflow,
5. Collapse of ~~reservoirs or a reservoir,~~ reservoir ~~roofs~~ roof, or pumphouse ~~structures~~ structure,
6. ~~Breaks~~ Break in a transmission or distribution ~~lines~~ line, and
7. Chemical or microbiological contamination of the water supply.

M.O. Waterborne disease ~~outbreaks~~ outbreak: A water supplier shall report to the Department the occurrence of a waterborne disease outbreak that may be attributable to water provided by the public water system ~~to the Department~~. A water supplier shall report the occurrence of a waterborne disease outbreak as soon as possible but no later than 24 hours after ~~discovery~~ actual notice of the waterborne disease outbreak.

N.P. Confirmation sample results: A water supplier shall report the analytical results of any confirmation sample required by the Department within 24 hours of receipt of the analytical results.

Θ.Q. Copies of public notices: A water supplier shall submit to the Department within 10 days of the date of completion of a public notice, a representative copy of each type of public notice required by R18-4-105 that is distributed, published, posted, or made available to persons served by the public water system or to the media and an affidavit ~~which that~~ describes how the public notice was provided ~~within ten days of the date of issuance~~.

P.R. Department requests for records: A water supplier shall submit to the Department, within the time stated in the request, copies of any records ~~required to be maintained~~ that the public water system maintains under R18-4-103 or copies of any documents ~~which that~~ the Department is entitled to inspect pursuant to ~~Section~~ § 1445 of the Safe Drinking Water Act.

Θ.S. The Department reporting forms: A water supplier shall report to the Department the results of all analyses completed pursuant to this Chapter ~~shall be reported to the Department in a manner and on forms approved~~

by the Department on Department-approved forms.

**R.T.** Direct reporting: A water supplier may contract with a laboratory or another agent to report monitoring results to the Department. In such cases, the water supplier ~~is~~ remains legally responsible for compliance with reporting requirements.

**U.** Reporting limits: A water supplier shall not report an analytical result as “not detected” or “ND” without a specific reference to a numeric “less than value” [i.e., “< x” where x is a numeric concentration]. A water supplier shall not report a “less than value” at a concentration that exceeds any of the following reporting limits:

1. Single point-of-entry sample:

- a. Inorganic chemicals (except nitrate, nitrite, fluoride, lead and copper): The reporting limit is the MCL for the inorganic chemical.
- b. Nitrate: 5 mg/L.
- c. Nitrite: 0.5 mg/L.
- d. Fluoride: 2.0 mg/L.
- e. Lead: 0.005 mg/L;
- f. Copper: 0.050 mg/L
- g. VOCs: 0.0005 mg/L.

2. Composite samples:

- a. Inorganic chemicals (except lead and copper): The reporting limit is 1/5 of the MCL for the inorganic chemical.
  - i. Lead: 0.001 mg/L
  - ii. Copper: The reporting limit is 0.001 mg/L if the method of analysis is either gas furnace atomic absorption or inductively coupled plasma, or 0.020 mg/L if the method of analysis is atomic absorption direct aspiration.
- b. VOCs: 0.0005 mg/L;
- c. SOCs:

Synthetic Organic Chemical	Reporting Limit [in mg/L]
Alachlor	0.0002
Atrazine	0.0001
Benzo(a)pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
2,4-D	0.0001
Dalapon	0.001
Dibromochloropropane	0.00002
Di(2-ethylhexyl)adipate	0.0006
Di(2-ethylhexyl)phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
Endothall	0.009
Endrin	0.00001
Ethylene dibromide	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
PCBs (as decachlorobiphenyl)	0.0001
Pentachlorophenol	0.00004
Picloram	0.0001
Simazine	0.00007
2,4,5-TP (Silvex)	0.0025
2,3,7,8-TCDD (Dioxin)	0.000000005

3. Radiochemical reporting limits: The reporting limit for a radiochemical shall be that concentration which can be counted with a precision of plus or minus 100% at the 95% confidence level (1.96 s where s is the standard deviation of the net counting rate of the sample).

a. Radium-226: 1 pCi/L.

b. Radium-228: 1 pCi/L.

c. Gross alpha particle activity: 3 pCi/L.

<u>d. Man-made beta particle and photon emitters:</u>	<u>Reporting Limit</u>
i. <u>Tritium</u>	<u>1,000 pCi/L.</u>
ii. <u>Strontium-89</u>	<u>10 pCi/L</u>
iii. <u>Strontium-90</u>	<u>2 pCi/L</u>
iv. <u>Iodine-131</u>	<u>1 pCi/L</u>
v. <u>Cesium-134</u>	<u>10 pCi/L</u>
vi. <u>Gross beta</u>	<u>4 pCi/L</u>
vii. <u>Other radionuclides</u>	<u>1/10 of the applicable limit</u>

**R18-4-105. General Public Notification Requirements**

A. MCL or treatment technique violations: A water supplier of a public water system ~~which that~~ fails to comply with an applicable ~~maximum contaminant level~~ MCL or a treatment technique requirement shall provide public notice to persons served by the system as follows:

1. ~~A water supplier shall provide public notice for a violation of a maximum contaminant level or a violation of a treatment technique by both:~~

1. Publication of Publish notice in a daily newspaper of general circulation in the area served by the system as soon as possible but not later than 14 days after the violation. If the area served by a public water system is not served by a daily newspaper of general circulation, ~~then the water supplier shall provide~~ public notice ~~shall be given~~ by publication in a weekly newspaper of general circulation serving the area; and

~~b~~ 2. Mail delivery of a notice of the violation by direct mail or with the water bill not later than 45 days after the ~~nonacute~~ violation. The Department may waive mail delivery of the notice if the water supplier corrects the violation within the 45-day period.

2 B. Acute violations: In addition to the public notice requirements prescribed in subsection ~~(A)(1)~~ (A), a water supplier shall provide public notice by television or radio broadcast for an acute violation defined in this subsection. A water supplier shall provide a copy of the ~~required~~ public notice to radio and television stations ~~which that~~ broadcast to the area served by the system as soon as possible but not later than 72 hours after an acute violation occurs. ~~Acute violations are~~ An acute violation is:

~~a~~ 1. ~~Violation of a maximum contaminant level~~ A violation of a MCL for total coliform when fecal coliforms or *E. coli* are present as specified in R18-4-202(A)(3) or ~~R18-4-203(A)(4)~~ R18-4-202(A)(4).

~~b~~ 2. ~~Violation of the maximum contaminant level~~ A violation of the MCL for nitrate or nitrite as specified in R18-4-205.

~~c~~ 3. ~~Occurrence of a waterborne disease outbreak that may be attributable to water distributed by the public water system~~ An occurrence of a waterborne disease outbreak that is attributable to water distributed by the public water system.

3 C. Monitoring violations, exemptions, and variances: A water supplier of a public water system ~~which that~~ fails to conduct required monitoring ~~required by this Chapter~~, fails to use approved analytical methods, or ~~which is granted that obtains~~ an exemption or variance ~~by from~~ the Department shall give public notice ~~to~~ persons served by the system by publication in a daily newspaper of general circulation ~~within three months of the monitoring violation or the granting of an exemption or variance~~. If the area served by a public water system is not served by a daily newspaper of general circulation, then a water supplier shall provide public notice by publication in a weekly newspaper of general circulation serving the area ~~within three months of the monitoring violation or the granting of an exemption or variance~~ as follows:

1. Publish notice in a daily newspaper of general circulation within 3 months of the monitoring violation or the grant of an exemption or variance, or

2. If the area served by the public water system is not served by a daily newspaper of general

circulation, a water supplier shall publish notice in a weekly newspaper of general circulation serving the area within 3 months of the monitoring violation or the grant of an exemption or variance.

**B D.** Alternative public notification procedures:

1. Community water systems: A water supplier of a community water system that is located in an area that is not served by radio, television, or a daily or weekly newspaper of general circulation shall provide public notice by hand delivery or continuous posting in conspicuous places within the area served by the system. Posting shall continue for a minimum of 10 days and as long as ~~any~~ a violation exists or for as long as an exemption or variance remains in effect.
  - a. Acute violations: A water supplier shall provide public notice of an acute violation by hand delivery or posting as soon as possible but not later than 72 hours after an acute violation occurs;
  - b. ~~Nonacute~~ MCL or treatment technique violations: A water supplier shall provide public notice of a ~~nonacute~~ MCL or treatment technique violation by hand delivery or posting within 14 days after a ~~nonacute~~ violation occurs.
  - c. ~~Monitoring violations or the granting of an exemption or variance exemptions, and variances:~~ Monitoring violations or the granting of an exemption or variance exemptions, and variances: A water supplier shall provide public notice by hand delivery or by posting within ~~three~~ 3 months of a monitoring violation or the ~~granting~~ grant of an exemption or variance by the Department.
2. Noncommunity water systems: ~~In lieu~~ Instead of providing public notice as prescribed in subsection (A), ~~(B), or (C) of this Section,~~ a water supplier of a noncommunity water system may provide public notice by hand delivery or by continuous posting in conspicuous places within the area served by the noncommunity system. Posting shall continue for a minimum of 10 days and for as long as ~~any~~ a violation exists or for as long as an exemption or variance remains in effect.
  - a. Acute violations: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting as soon as possible but not later than 72 hours after an acute violation occurs;

- b. ~~Nonacute~~ MCL or treatment technique violations: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting within 14 days after a ~~nonacute~~ MCL or treatment technique violation occurs.
- c. Monitoring violations, ~~or the granting of an exemption or variance~~ exemptions, and variances: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting within ~~three~~ 3 months of ~~the~~ a monitoring violation or the ~~granting grant~~ of an exemption or variance by the Department.

~~E.E.~~ Repeat public notice shall be given ~~Repeat public notice: The water supplier shall give repeat public notice~~ at least once every ~~three~~ 3 months by mail delivery, ~~direct mail, or with the water bill~~ (by direct mail or with the water bill) for as long as any violation exists. ~~Repeat~~ The water supplier shall give repeat public notice of the existence of a variance or exemption ~~shall be given~~ every ~~three~~ 3 months for as long as the variance or exemption remains in effect. For a community water ~~systems~~ and or a noncommunity water ~~systems~~ which provide system that provides public notice by posting, repeat public notice requirements are satisfied by continuous posting.

~~D.F.~~ Public notice may be given Limited public notice: The water supplier may give public notice to only a portion of the population served by a public water system if the water supplier demonstrates that only a segment of the population served by the public water system is affected by the problem which results in the need for public notice.

~~E.G.~~ Notice to new customers: A water supplier shall give a copy of the most recent public notice for any outstanding violation of a ~~maximum contaminant level~~ MCL, treatment technique requirement, or ~~any a~~ violation of a schedule of compliance prescribed pursuant to a variance or exemption to all new billing units or hookups prior to or at the time service begins.

~~F.H.~~ General content of a public notice: The contents of each Each public notice shall provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the public water system is taking to correct the violation, the necessity for using alternative water supplies, ~~if any~~; and any measures the consumer should take to minimize exposure until the violation is corrected. Each public notice shall be conspicuous and free of unduly technical language, small print,

editorial comments, or similar problems that frustrate the purposes of the notice. Each public notice shall include the name and telephone number of a person at the public water system who can be contacted for additional information about the notice. Where appropriate, the public notice shall be multi-lingual.

- ~~G.I.~~ Mandatory health effects language: A water supplier shall include the mandatory health effects language prescribed in Appendix A in a public notice for the violation of a maximum contaminant level or treatment technique and in a public notice regarding the granting or continued existence of a variance or exemption.
- ~~H.~~ Within ten days of the date of issuance of public notice, a water supplier shall submit to the Department a copy of any public notice and an affidavit which describes how public notice was provided.
- ~~F.J.~~ The Department shall not provide public notice on behalf of the water supplier. If a water supplier fails to notify the public in accordance with the requirements of this Section, the Department may provide ~~public~~ notice to persons served by the public water system by any of the methods listed in this Section or by issuance of a press release. The water supplier remains legally responsible for ensuring that the requirements of this Section are met.

**R18-4-109. Sample Collection, Preservation, and Transportation**

~~Sample collection shall be conducted~~ The water supplier shall collect samples using the sample preservation, container, and maximum holding time procedures that are prescribed by the Arizona Department of Health Services or the U.S. Environmental Protection Agency for the analytical method used.

**R18-4-116. Emergency Operation Plans**

- A. ~~By January 1, 1994, each~~ The water supplier for a community water system shall develop and keep an ~~emergency operations plan in an easily accessible location~~ an emergency operations plan. ~~The~~ At a minimum, the emergency operations plan shall detail the steps that the community water system will take to assure continuation of service, ~~as a minimum,~~ in the following emergency situations:
1. Loss of ~~source of the water supply~~ a source,
  2. Loss of water supply due to major component failure,

3. Damage to power supply equipment or loss of power,
  4. Contamination of water in the distribution system ~~as a result of~~ from backflow,
  5. Collapse of ~~reservoirs or reservoir roofs or pumphouse structures~~ a reservoir, reservoir roof, or pumphouse structure,
  6. ~~Breaks~~ A break in a transmission or distribution ~~lines;~~ line, and
  7. Chemical or microbiological contamination of the water supply.
- B. The emergency operations plan required by Subsection ~~(B)~~ (A) of this Section shall address all of the following issues:
1. ~~The provision~~ Provision of alternate sources of water during the emergency,
  2. ~~Notification procedures relating to~~ Notice procedures for regulatory agencies, news media, and users, ~~which shall include personal protection and water use guidelines;~~
  3. Disinfection and testing of the distribution system once service is restored;
  4. Identification of critical system components that shall remain in service or be returned to service quickly;
  5. Critical spare parts inventory; and
  6. Staff training in emergency response procedures.

**R18-4-117. Unsafe Supplies**

- ~~A.~~ The Department may order a public water system to disconnect a source to protect the public health from an acute health risk that is attributable to the source. An acute health risk is posed when one of the following occurs:
1. ~~There is a violation of a maximum contaminant level~~ A violation of a MCL for total coliform ~~when and~~ fecal coliform or *E. coli* are present that is attributable to the source,
  2. ~~There is a violation of a maximum contaminant level~~ A violation of the MCL for nitrate or nitrite that is attributable to the source, or
  3. ~~There is an~~ An occurrence of a waterborne disease outbreak that is attributable to the source.
- ~~B. Whenever a well is permanently abandoned, the well shall be properly sealed and notice given to the~~

**R18-4-119. Additives**

- A. All products added directly to water during production or treatment ~~after January 1, 1993~~ shall conform to ~~National Sanitation Foundation Standard 60, amended as of October, 1988 (and no future amendments); which is incorporated herein by reference and on file with the Office of the Secretary of State. Products covered by this requirement include water well products and those used for disinfection, oxidation, filtration, scale control, corrosion control, pH adjustment, softening, precipitation, sequestering, fluoridation, coagulation, flocculation, and miscellaneous treatments. American National Standards Institute / NSF International Standard 60-1996a, Drinking Water Treatment Chemicals - Health Effects, NSF International, 3475 Plymouth Road, P.O. box 130140, Ann Arbor, Michigan, (Revised November, 1996) and no future amendments), which is incorporated by reference and on file with the Office of the Secretary of State and the Department. Products covered by this subsection include:~~
1. Coagulation and flocculation chemicals,
  2. Chemicals for corrosion and scale control,
  3. Chemicals for softening, precipitation, sequestering, and pH adjustment,
  4. Disinfection and oxidation chemicals,
  5. Chemicals for fluoridation, defluoridation, algae control, and dechlorination,
  6. Dyes and tracers,
  7. Antifreezes, antifoamers, regenerants, and separation process scale inhibitors and cleaners,
  8. Water well drilling and rehabilitation aids, and
  9. Miscellaneous water supply products.
- B. ~~Except as identified in subsections (D) and (E), Materials materials or products used or installed after~~ January 1, 1993, that come into contact with water or with water treatment chemicals shall conform to ~~National Sanitation Foundation Standard 61, amended as of October, 1988 (and no future amendments)~~ American National Standards Institute / NSF International Standard 61-1997(b), Drinking Water System Components - Health Effects, NSF International, 3475 Plymouth Road, P.O. Box 130140, Ann Arbor,

Michigan (Revised July, 1997) (and no future amendments) which is incorporated ~~herein~~ by reference and on file with the Office of the Secretary of State and the Department. Products and materials covered by this requirement subsection include:

1. Process media, such as carbon and sand;
  2. Joining and sealing materials, such as solvents, cements, welding materials, and gaskets;
  3. Lubricants;
  4. Pipes and related products, such as tanks and fittings;
  5. Mechanical devices used in treatment, transmission, or distribution systems such as valves, chlorinators, and separation membranes; and
  6. Surface coatings and paints.
- C. Evidence that a product conforms to the requirements of this Section shall be the appearance on the product or product package of the ~~seal of a certifying entity, which has been accredited to provide such certification by the American National Standards Institute~~ NSF Listing Mark.
- D. *The Director shall consider standards for chemicals, materials, or equipment that have been certified by the National Standards Foundation as complying with the standards required by this Section. In those instances where chemicals, materials, and equipment that come into contact with drinking water are essential to the design, construction, or operation of a drinking water system and have not been certified by the National Sanitation Foundation standard or have National Sanitation Foundation certification but are not available from more than one source, the standards shall provide for the use of alternatives which include:*
1. *Products composed entirely of ingredients determined by the Environmental Protection Agency, the Food and Drug Administration, or other federal agencies as appropriate for addition to potable water or aqueous food.*
  2. *Products composed entirely of ingredients listed in the National Academy of Sciences "Water Chemicals Codex."*
  3. *Products consistent with the specifications of the American Water Works Association.*
  4. *Products designed for use in drinking water systems that are consistent with the specifications*

of the American Society for Testing and Materials.

5. Products historically used or in use in drinking water systems, consistent with standard practice, which have not been demonstrated during past applications in the United States to contribute to water contamination.

E. The following materials or products are not covered by the the requirement to conform to National Sanitation Foundation Standard 61:

1. Concrete structures, tanks, and treatment tank basins constructed on-site that are not normally coated or sealed if the construction materials used in the concrete are consistent with subsection (D) Any coatings or sealants specified by the design engineer shall comply with National Sanitation Foundation Standard 61.
2. Earthen reservoirs and canals located upstream of water treatment.
3. Drinking water treatment plants constructed on-site or at a job shop that are comprised of components that comply with subsections (B), (C), and (D).
4. Galvanized steel tanks and synthetic tanks constructed of resins that are:
  - a. Approved by the Food and Drug Administration to be used in contact with drinking water or aqueous food.
  - b. Less than 15,000 gallons in capacity, and
  - c. Are used in public water systems with 500 or fewer service connections.
5. Stainless steel pipes, treatment plant components, and water distribution system components.

**R18-4-121. Enforcement**

- A. ~~Any person who owns, constructs, operates or maintains a public water system~~ A water supplier who constructs, operates, or maintains a public water system contrary to the provisions of this Chapter or ~~any person who~~ fails to maintain the quality of water within ~~such~~ the public water system as required by this Chapter ~~shall be~~ is subject to the actions provided in A.R.S. §49-142 and §49-354.
- B. If the Department determines that a public water system is not in compliance with any of the provisions of this Chapter, the Department may issue an order to the ~~system which~~ water supplier that requires the public

water system to make no further service connections or ~~which that~~ limits the number of service connections until the Department determines that the public water system achieves compliance.

- C. The Department may determine compliance or initiate enforcement action based upon analytical results and other information compiled by the Department or other federal, state, or local agencies.
- D. The Department shall round compliance data to the same number of significant figures as the MCL in question to determine compliance with the MCL.

## ARTICLE 2. MAXIMUM CONTAMINANT LEVELS AND MONITORING REQUIREMENTS

### R18-4-201. Maximum Contaminant Levels; Public Water Systems Affected

- A. Except as provided in this Section, the ~~maximum contaminant levels~~ MCLs prescribed in this Article apply to water distributed by a public water system.
- B. ~~Only the maximum contaminant levels~~ Except as provided in subsection (D), only the MCLs for nitrate, nitrite, and total coliform apply to water distributed by a ~~transient, noncommunity water system~~ TNCWS. ~~The interim maximum contaminant levels for turbidity apply to a transient, noncommunity water system that is a surface water system which does not provide filtration.~~
- C. The ~~maximum contaminant level~~ MCLs for fluoride, ~~applies~~ arsenic, and radiochemicals apply only to water distributed by a ~~community water system~~ CWS.
- D. The interim ~~maximum contaminant levels~~ MCLs for turbidity apply only to water that is distributed by a surface water system ~~which that~~ does not provide filtration.
- E. The ~~maximum contaminant level~~ MCL for total trihalomethanes applies only to water distributed by a ~~community water system which~~ CWS that serves a population of 10,000 or more and ~~which that~~ adds a halogenated disinfectant to the water in any part of the treatment process.

### R18-4-205. Inorganic Chemicals; MCLs

- A. Water that is distributed by a community water system or a nontransient, noncommunity water system shall not exceed the following maximum contaminant levels for inorganic chemicals:

<u>Contaminant</u>	<u>MCL(mg/L)</u>	<u>Alternate MCL (mg/L)</u>
Antimony	0.006	
Arsenic <sup>a</sup>	0.05	
Asbestos	7 MFL <sup>b</sup>	
Barium	2	
Beryllium	0.004	
Cadmium	0.005	
Chromium	0.1	
Cyanide (as free cyanide)	0.2	
Fluoride <sup>a</sup>	4.0	
Mercury	0.002	
<del>Nickel</del>	<del>0.1</del>	
Nitrate (as N)	10	20 <sup>c</sup>
Nitrite (as N)	1	
Total nitrate/nitrite	10	20 <sup>c</sup>
Selenium	0.05	
Thallium	0.002	

<sup>a</sup> ~~"MFL" means million fibers per liter greater than ten microns.~~

<sup>b</sup> ~~The maximum contaminant level for fluoride applies to community water systems only.~~

<sup>a</sup> The MCLs for fluoride and arsenic apply to community water systems only.

<sup>b</sup> "MFL" means million fibers per liter greater than 10 microns in length.

<sup>c</sup> The Department may allow a ~~public~~ noncommunity water system to comply with the alternate ~~maximum~~ contaminant level MCL for nitrate and for total nitrate/nitrite provided all of the following conditions are met: 1) the public water system is a noncommunity water system; 2) water provided by the noncommunity water system will not be available to children under ~~six~~ 6 months of age; 3) the water supplier continuously posts notice of the fact that nitrate levels may exceed the MCL of 10 mg/L; 4) the water supplier continuously posts notice of the potential health effects ~~exposure to~~ on infants under ~~six~~ 6 months of age;

5) the water supplier notifies the Department annually of nitrate levels that exceed 10 mg/L; and 6) no adverse health effects result.

- B. Water that is distributed by a ~~transient, noncommunity water system [TNCWS]~~ TNCWS shall not exceed the ~~maximum contaminant levels~~ MCLs for nitrate, nitrite, and total nitrate/nitrite. The ~~maximum contaminant levels~~ MCLs for other inorganic chemicals listed in ~~R18-4-205~~ this Section do not apply to water that is distributed by a ~~transient, noncommunity water system~~ TNCWS.

**R18-4-206. Monitoring Requirements for Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, ~~Nickel~~, Selenium, and Thallium.**

- A. A ~~transient, noncommunity water system~~ TNCWS is not required to monitor for the inorganic chemicals listed in this Section. ~~Community water systems [CWS] and nontransient, noncommunity water systems [NTNCWS]~~ Each CWS and NTNCWS shall conduct monitoring ~~monitor~~ for the following inorganic chemicals:
1. Each CWS shall ~~conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels~~ MCLs for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, ~~nickel~~, selenium, and thallium.
  2. Each NTNCWS shall ~~conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels~~ MCLs for all of the inorganic chemicals listed in subsection (A)(1) except fluoride and arsenic.
- B. Each CWS or NTNCWS shall conduct initial monitoring for inorganic chemicals listed in this Section in the monitoring year designated by the Department. ~~according to the following schedule:~~
1. ~~Each CWS shall conduct initial monitoring for arsenic, barium, cadmium, chromium, fluoride, mercury, and selenium in the compliance period that begins on January 1, 1993.~~
  2. ~~Each NTNCWS shall conduct initial monitoring for arsenic, barium, cadmium, chromium, mercury, and selenium in the compliance period that begins on January 1, 1993.~~
  3. ~~Each CWS and NTNCWS serving 150 or more service connections shall conduct initial monitoring for antimony, beryllium, cyanide, nickel, and thallium in the compliance period that~~

begins January 1, 1993:

~~4. Each CWS AND NTNCWS with less than 150 service connections shall conduct initial monitoring for antimony, beryllium, cyanide, nickel, and thallium in the compliance period that begins January 1, 1996.~~

C. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor for inorganic chemicals at each sampling point as prescribed in R18-4-218.

D. A CWS or NTNCWS may composite samples for inorganic chemicals as prescribed in R18-4-219.

E. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor at the following frequencies:

1. Each CWS or NTNCWS shall take ~~one~~ 1 sample at each groundwater sampling point ~~during each compliance period [i.e., once every three years]:~~ once every 3 years.
2. Each CWS or NTNCWS shall take ~~one~~ 1 sample annually at each surface water sampling point ~~during each compliance period~~.

F. A water supplier may use monitoring data ~~collected prior to January 1, 1993~~ collected before the initial monitoring year to satisfy initial monitoring requirements at a sampling point provided at least one sample ~~was taken after January 1, 1990~~ was taken in the 3 years immediately prior to the initial monitoring year.

G. If the analytical results from a sampling point indicate that the concentration of an inorganic chemical exceeds a ~~maximum contaminant level, then~~ MCL, a CWS or NTNCWS shall take quarterly samples at that sampling point, beginning in the calendar quarter immediately following collection of the sample ~~which that~~ exceeded the ~~maximum contaminant level~~ MCL. A CWS or NTNCWS shall continue quarterly sampling at the sampling point until:

1. Groundwater sampling points: A minimum of ~~two~~ 2 consecutive quarterly samples are taken and the concentration of the inorganic chemical in each sample is below the ~~maximum contaminant level~~ MCL. If this criterion is met, the Department may decrease the monitoring frequency from quarterly to ~~one~~ 1 sample every ~~three~~ 3 years. The Department's decision to reduce monitoring frequency shall be in writing.
2. Surface water sampling points: A minimum of ~~four~~ 4 consecutive quarterly samples are taken and the concentration of the inorganic chemical in each sample is below the ~~maximum contaminant~~

~~level MCL~~. If this criterion is met, the Department may decrease monitoring frequency from quarterly to annually. The Department's decision to reduce monitoring frequency shall be in writing.

- H. ~~Where~~ If the analytical results of an initial sample indicate that there is an exceedance of a ~~maximum contaminant level MCL~~, the Department may require that ~~one~~ a confirmation sample be taken as soon as possible but no later than 2 weeks after the initial sample was taken, ~~but not to exceed two weeks~~, at the same sampling point.
- I. Compliance with a ~~maximum contaminant level MCL~~ for an inorganic chemical ~~shall be determined is~~ based upon the analytical result from a single sample obtained at each sampling point unless ~~a confirmation sample is required by the Department~~ the Department requires a confirmation sample. If the Department requires ~~that~~ a confirmation sample ~~be taken, then~~ the analytical results of the initial sample and the confirmation sample shall be averaged. The resulting average shall be used to determine compliance with the ~~maximum contaminant level MCL~~.
- J. A water supplier may apply to the Department to conduct monitoring at a sampling point more frequently than the monitoring frequency specified in subsection (E). ~~A water supplier shall not conduct monitoring at a sampling point at a frequency greater than quarterly~~. If the Department gives written approval to conduct quarterly more frequent monitoring at a sampling point, ~~then~~ compliance shall be determined by a running annual average at ~~that~~ the sampling point. If the running annual average at the sampling point is greater than the ~~maximum contaminant level, then MCL~~, the public water system is out of compliance. If any ~~one sample would cause~~ single analytical results causes the running annual average to exceed the ~~maximum contaminant level, then MCL~~, the public water system is immediately out of compliance ~~immediately~~.
- K. A water supplier may make a written request to reduce monitoring frequency for an inorganic chemical at a sampling point. The Department may reduce monitoring frequency at a sampling point as follows:
1. Groundwater sampling points: The Department may reduce monitoring frequency at a groundwater sampling point from once every ~~three~~ 3 years to a less frequent basis if a public water system has monitored at least once every ~~three~~ 3 years for ~~nine~~ 9 years at the groundwater sampling point and all previous analytical results for the inorganic chemical are below the ~~maximum~~

~~contaminant level MCL. At least one sample shall have been taken after January 1, 1990.~~

2. Surface water sampling points: The Department may reduce monitoring frequency at a surface water sampling point from annually to a less frequent basis if the surface water system has monitored annually at the surface water sampling point for at least ~~three~~ 3 consecutive years and all previous analytical results for the inorganic chemical are below the ~~maximum contaminant level MCL. At least one sample shall have been taken after January 1, 1990.~~
3. ~~The Department may reduce monitoring frequency at a sampling point for a term not to exceed nine years.~~ The term of reduced monitoring shall not exceed 9 years.
4. A CWS or NTNCWS shall take at least ~~one~~ 1 sample at ~~each~~ the sampling point during the ~~term of reduced monitoring term.~~
5. In determining the appropriate reduced monitoring frequency at a sampling point during the term of reduced ~~monitoring~~, the Department shall consider the following factors:
  - a. Reported concentrations of the inorganic chemical from all previous monitoring;
  - b. The degree of variation in the reported concentrations of the inorganic chemical; and
  - c. Other factors that may affect the concentration of the inorganic chemical such as changes in groundwater pumping rates, ~~changes in~~ the configuration of the CWS or NTNCWS, ~~or changes in~~ operating procedures, stream flows, or source water characteristics.
6. ~~A decision by the Department~~ The Department's decision to reduce monitoring frequency at a sampling point shall be in writing and shall ~~set forth~~ specify the grounds for the decision. A water supplier may make a written request for reduced monitoring or ~~reduced monitoring may be granted on the Department's initiative~~ the Department may grant reduced monitoring on its own. A water supplier shall provide documentation of analytical results ~~which supports~~ that support the request for reduced monitoring. When a CWS or NTNCWS submits new data or ~~when if~~ other data relevant to the public water system's appropriate monitoring frequency ~~becomes~~ become available, the Department shall review ~~that the~~ data and, ~~where if~~ appropriate, revise its determination of ~~appropriate~~ monitoring frequency.
7. A CWS or NTNCWS ~~which~~ that uses a new source is not eligible for reduced monitoring until

~~three~~ it completes 3 consecutive rounds of monitoring from the new source ~~have been completed~~.

- L. The Department may grant a public water system a waiver ~~for the monitoring of cyanide~~ from cyanide monitoring if the Department determines that the system is not vulnerable ~~due to absence of any~~ because there is no industrial source of cyanide.

**R18-4-208. Nitrate; monitoring requirements**

- A. All public water systems ~~including transient, noncommunity water systems,~~ shall conduct monitoring shall monitor to determine compliance with the ~~maximum contaminant level~~ MCL for nitrate.
- B. ~~Monitoring to determine compliance with the maximum contaminant level for nitrate shall be conducted~~ A public water system shall monitor to determine compliance with the MCL for nitrate at each sampling point as prescribed in R18-4-218.
- C. A public water system may composite nitrate samples as prescribed in R18-4-219.
- D. Each public water system shall conduct monitoring for nitrate at the following frequencies:
1. ~~A community water system [CWS] or a nontransient, noncommunity water system [NTNCWS]~~ CWS or NTNCWS shall monitor annually at each groundwater sampling point ~~during each compliance period~~.
  2. A CWS or NTNCWS shall monitor quarterly at each surface water sampling point ~~during each compliance period~~.
  3. ~~All transient, noncommunity water systems~~ A TNCWS shall monitor annually at each sampling point ~~during each compliance period~~.
- E. The Department may reduce the monitoring frequency at a surface water sampling point from quarterly to annually if the analytical results from the sampling point demonstrate that the concentration of nitrate is ~~less than~~ ≤ 5 mg/L for ~~four~~ 4 consecutive quarters. A CWS or NTNCWS shall return to quarterly monitoring at a surface water sampling point if the analytical result for any sample indicates that the concentration of nitrate is ~~greater than or equal to~~ ≥ 5 mg/L. If the Department reduces the monitoring frequency at a surface water sampling point from quarterly to annually, ~~then~~ the annual sample shall be taken during the quarter which previously yielded the highest analytical result for nitrate. The Department's decision to

allow a CWS or NTNCWS to reduce monitoring frequency at a surface water sampling point shall be in writing.

- F. A CWS or NTNCWS ~~which that~~ collects a sample from a groundwater sampling point with a concentration of nitrate that is ~~greater than or equal to~~ \$ 5 mg/L shall increase the monitoring frequency at that sampling point from annually to quarterly. The Department may subsequently reduce the monitoring frequency at ~~that the~~ groundwater sampling point from quarterly to annually if the analytical results for ~~four~~ 4 consecutive quarterly samples are ~~less than~~ ≤ 10 mg/L. If the Department reduces the monitoring frequency at the groundwater sampling point from quarterly to annually, ~~then~~ the annual sample shall be taken during the quarter ~~which that~~ previously yielded the highest analytical result for nitrate. If the Department reduces the monitoring frequency at the groundwater sampling point from quarterly to annually, a subsequent detection of nitrate in a concentration that is \$ 5 mg/L and # 10 mg/L shall not trigger quarterly monitoring. The Department's decision to allow a CWS or NTNCWS to reduce monitoring frequency at a ~~groundwater sampling point to annually~~ shall be in writing.
- G. The Department shall not accept monitoring data collected before ~~January 1, 1993~~ the initial monitoring year to satisfy initial monitoring requirements for nitrate.
- H. Monitoring waivers for nitrate are ~~not allowed~~ prohibited.
- I. If ~~the analytical result obtained from a sample indicates that~~ the concentration of nitrate in a sample exceeds 10 mg/L, ~~then~~ a water supplier shall take a confirmation sample at the same sampling point within 24 hours of ~~receipt of~~ receiving the analytical results of the initial sample. A water supplier ~~who that~~ is unable to take a confirmation sample within 24 hours shall issue public notice to persons served by the system in accordance with R18-4-105. A water supplier ~~who that~~ does not take a confirmation sample within 24 hours and ~~who~~ issues public notice shall take and complete the analysis of a confirmation sample within ~~two~~ 2 weeks of receiving the analytical results of the initial sample.
- J. Compliance with the ~~maximum contaminant level~~ MCL for nitrate ~~shall be determined~~ is based upon the average of the analytical results of the initial sample and the confirmation sample. If a water supplier fails to take the required confirmation sample within the time ~~frames~~ prescribed in subsection (I), compliance ~~shall be determined~~ is based upon the analytical results of the initial sample.

**R18-4-209. Nitrite; monitoring requirements**

- A. All public water systems, ~~including transient, noncommunity water systems, shall conduct monitoring~~ shall monitor to determine compliance with the ~~maximum contaminant level~~ MCL for nitrite.
- B. Each public water system shall ~~conduct monitoring to determine compliance with the maximum contaminant level~~ monitor for nitrite at each sampling point as prescribed in R18-4-218.
- C. A public water system may composite nitrite samples as prescribed in R18-4-219.
- D. A public water system shall take ~~one~~ 1 sample at each sampling point during the initial compliance period. Each public water system shall ~~conduct monitoring~~ monitor for nitrite in the initial monitoring year ~~specified~~ designated by the Department within the initial compliance period ~~in the compliance cycle beginning January 1, 1993.~~
- E. If the analytical result of the initial nitrite sample at a sampling point is ~~less than~~ < 0.5 mg/L (as N), ~~then~~ a public water system is not required to take another nitrite sample at that sampling point until the ~~initial~~ first compliance period of the next compliance cycle.
- F. If the analytical result of the initial nitrite sample at a sampling point is ~~greater than or equal to~~ ≥ 0.5 mg/L (as N), ~~then~~ a public water system shall conduct quarterly monitoring at that sampling point for at least ~~four~~ 4 consecutive quarters.
- G. The Department may reduce the monitoring frequency at a sampling point from quarterly to annually if ~~the results of four consecutive quarterly samples demonstrate that the concentration of nitrite in each sample is less than 4 consecutive quarterly samples is~~ < 1 mg/L (as N). If the Department reduces the monitoring frequency from quarterly to annually, ~~then~~ the public water system shall take subsequent annual samples during the quarter which previously yielded the highest analytical result for nitrite. If the Department reduces the monitoring frequency at a sampling point from quarterly to annually and there is a subsequent detection of nitrite at the sampling point in a concentration that is ≥ 0.5 mg/L but < 1 mg/L, the detection shall not trigger quarterly monitoring. The Department's decision to reduce monitoring frequency shall be in writing.
- H. The Department shall not accept monitoring data collected before ~~January 1, 1993~~ the initial monitoring year to satisfy initial monitoring requirements for nitrite.

- I. Monitoring waivers for nitrite are ~~not allowed~~ prohibited.
- J. A public water system shall take a confirmation sample if the analytical result of any sample indicate that If the concentration of nitrite in a sample exceeds 1 mg/L (as N), ~~The confirmation sample shall be taken~~ the water supplier shall take a confirmation sample at the same sampling point within 24 hours of receipt of receiving the analytical results of the initial sample. A water supplier ~~who that~~ cannot take a confirmation sample within 24 hours shall issue public notice to persons served by the system in accordance with R18-4-105. ~~and~~ A water supplier that cannot take a confirmation sample within 24 hours and that issues public notice shall take and complete the analysis of a confirmation sample within ~~two~~ 2 weeks of receiving the analytical results of the initial sample.
- K. Compliance with the ~~maximum contaminant level~~ MCL for nitrite ~~shall be determined~~ is based upon the average of the analytical results of the initial sample and the confirmation sample. If a water supplier fails to take the required confirmation sample, compliance ~~shall be determined~~ is based upon the analytical results from the initial sample.

**R18-4-212. Volatile Organic Chemical; Monitoring Requirements**

- A. Community water systems [CWS] and nontransient, noncommunity water systems [NTNCWS] Each CWS and NTNCWS shall conduct monitoring ~~monitor~~ to determine compliance with the ~~maximum contaminant levels~~ MCLs for the ~~volatile organic chemicals~~ VOCs listed in R18-4-211. ~~Transient, noncommunity water systems are~~ A TNCWS is not required to monitor for ~~volatile organic chemicals~~ the VOCs listed in R18-4-211.
- B. A CWS or NTNCWS shall conduct initial monitoring for ~~volatile organic chemicals during the compliance period that begins on January 1, 1993,~~ VOCs in the monitoring year designated by the Department within the initial compliance period, except that a CWS or NTNCWS shall monitor for vinyl chloride only as prescribed in R18-4-213.
  - 1. ~~A CWS and NTNCWS shall conduct monitoring for vinyl chloride only as prescribed in~~  
~~R18-4-213; and~~
  - 2. ~~Each CWS and NTNCWS with less than 150 service connections shall conduct monitoring for~~

dichloromethane, 1,2,4-trichlorobenzene, and 1,1,2-trichloroethane in the compliance period which begins January 1, 1996.

- C. Each CWS and NTNCWS shall ~~conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels~~ MCLs for ~~volatile organic chemicals~~ VOCs at each sampling point as prescribed in R18-4-218.
- D. A water supplier may composite samples for ~~volatile organic chemicals~~ VOCs as prescribed in R18-4-219.
- E. A CWS or NTNCWS shall take ~~four~~ 4 consecutive quarterly samples at each sampling point for each ~~volatile organic chemical~~ VOC listed in R18-4-211 (except vinyl chloride) during the initial compliance period ~~beginning January 1, 1993~~ unless a CWS or NTNCWS qualifies for reduced monitoring or obtains a monitoring waiver. A CWS shall conduct initial monitoring for ~~volatile organic chemicals~~ VOCs in the monitoring year designated by the Department within the initial compliance period.
- ~~F. The Department may accept monitoring data which was collected after January 1, 1988 and prior to January 1, 1993 to satisfy initial monitoring requirements for a volatile organic chemical listed in R18-4-211 (i.e., a single sample rather than four consecutive quarterly samples). A CWS or NTNCWS which uses grandfathered monitoring data and which did not detect any volatile organic chemical listed in R18-4-211 at a sampling point shall take 1 sample annually at that sampling point in the initial compliance period which begins January 1, 1993.~~
- ~~G.F.~~ GF. If a volatile organic chemical is not detected at a groundwater or surface water sampling point If the concentration of a VOC in four 4 consecutive quarterly samples during the initial compliance period is < 0.0005 mg/L, then a CWS or NTNCWS shall take ~~one~~ 1 sample annually at that ~~groundwater or surface water~~ sampling point in repeat compliance periods. After ~~The Department may further reduce monitoring frequency at a groundwater sampling point to 1 sample every 3 years if, after a minimum of three 3 years of sampling at the groundwater sampling point (including the four 4 consecutive quarterly samples taken during the initial compliance period) with no detections of a volatile organic chemical at a groundwater sampling point, the Department may reduce monitoring frequency for that volatile organic chemical at that groundwater sampling point to one sample every three years [i.e., once during each compliance period]~~ the Department finds that the concentration of the VOC in each annual sample is < 0.0005 mg/L. The

Department shall not reduce monitoring frequency at a surface water sampling point to less than annually.

The Department's decision to allow reduced monitoring at a sampling point shall be in writing.

H.G. ~~If a volatile organic chemical is detected at a sampling point in a concentration which is greater than or equal to~~ If the concentration of a VOC in a sample is  $\leq$  0.0005 mg/L, then a CWS or NTNCWS shall sample quarterly for the ~~volatile organic chemical~~ VOC at that sampling point, beginning in the quarter immediately following collection of the sample ~~in which the volatile organic chemical was detected that was  $\leq$  0.0005 mg/L.~~ A CWS or NTNCWS shall continue quarterly monitoring at the sampling point until:

1. For a groundwater sampling point, a minimum of ~~two~~ 2 consecutive quarterly samples are taken (which may include the initial detection) and the concentration of the ~~volatile organic chemical~~ VOC in each sample is below the ~~maximum contaminant level~~ MCL. If the concentration of the ~~volatile organic chemical~~ VOC is less than the MCL for a minimum of ~~two~~ 2 consecutive quarterly samples, ~~then~~ the Department may reduce monitoring frequency at the groundwater sampling point from quarterly to annually. If the Department reduces monitoring frequency ~~to annually, then a~~ the CWS or NTNCWS shall take the annual sample during the quarter ~~which~~ that previously yielded the highest analytical result. If the concentration of the ~~volatile organic chemical~~ VOC is  $<$  0.0005 mg/L for ~~three~~ 3 consecutive annual samples, ~~then~~ a CWS or NTNCWS may request that the Department further reduce monitoring frequency to once every ~~three~~ 3 years or the CWS or NTNCWS may apply for a monitoring waiver.
2. For a surface water sampling point, a minimum of ~~four~~ 4 consecutive quarterly samples are taken (which may include the initial detection) and the concentration of the ~~volatile organic chemical~~ VOC in each sample is ~~below the maximum contaminant level~~ less than the MCL. If the concentration of the ~~volatile organic chemical~~ VOC is less than the MCL for a minimum of ~~four~~ 4 consecutive quarterly samples, ~~then~~ the Department may reduce monitoring frequency at the surface water sampling point from quarterly to annually. If the Department reduces monitoring frequency ~~to annually, then a~~ the CWS or NTNCWS shall take the annual sample during the quarter ~~which~~ that previously yielded the highest analytical

result. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually.

f.H. The Department may require increased monitoring for a ~~volatile organic chemical~~ where VOC if necessary to detect variations in a CWS or NTNCWS. A Department decision to require increased monitoring shall be in writing.

f.I. ~~Compliance with the maximum contaminant level~~ The Department shall determine compliance with the MCL for a ~~volatile organic chemical~~ shall be determined VOC based upon the analytical results obtained at each sampling point.

1. For a CWS or NTNCWS ~~which~~ that samples quarterly or more frequently, ~~compliance shall be determined~~ the Department shall determine compliance by the running annual average of samples taken at each sampling point. If the running annual average at any sampling point is greater than the ~~maximum contaminant level MCL~~, ~~then~~ the system is out of compliance. If any quarterly sample ~~would cause~~ causes the running annual average to ~~be exceeded~~ exceed the MCL, ~~then~~ the system is immediately out of compliance ~~immediately~~.
2. If a CWS or NTNCWS samples on an annual or less frequent basis, the system is out of compliance if the concentration of a ~~volatile organic chemical~~ VOC in a single sample exceeds the ~~maximum contaminant level MCL~~.
3. A CWS or NTNCWS that is ~~determined to be~~ out of compliance with a ~~maximum contaminant level MCL~~ for a ~~volatile organic chemical~~ VOC at a groundwater or surface water sampling point shall take ~~a minimum of four~~ at least 4 consecutive quarterly samples at that sampling point. The CWS or NTNCWS shall continue quarterly monitoring until the running annual average is below the ~~maximum contaminant level MCL~~. If the running annual average is below the ~~maximum contaminant level MCL~~, ~~then~~ the Department may reduce monitoring frequency at the groundwater or surface water sampling point from quarterly to annually. If the Department reduces monitoring frequency to annually, ~~then~~ a CWS or NTNCWS shall take the annual sample during the quarter ~~which~~ that previously yielded the highest analytical result. If the concentration of the ~~volatile organic chemical~~ VOC at a groundwater sampling point is below the ~~maximum contaminant level~~

MCL for ~~three~~ 3 consecutive annual samples, ~~then~~ a CWS or NTNCWS may request that the Department further reduce monitoring frequency at that groundwater sampling point to once every ~~three~~ 3 years. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually.

4. ~~If a confirmation sample is required by the Department~~ If the Department requires a confirmation sample, the analytical result ~~must~~ shall be averaged with the initial analytical result and the average used in the compliance determination as specified in subsection ~~(f)~~ (d)(1) or (2). ~~The Department may delete results of obvious sampling errors from this calculation.~~

K.J. The Department may require a confirmation sample for positive or negative results.

E.K. A CWS or NTNCWS ~~which that~~ does not detect a ~~volatile organic chemical~~ VOC at a sampling point in a concentration ~~greater than or equal to that is~~ \$ 0.0005 mg/l during initial monitoring may submit a written request to the Department for a waiver from repeat monitoring requirements at that sampling point. A CWS or NTNCWS may not obtain a waiver from initial monitoring requirements. ~~The Department may grant a monitoring waiver provided the CWS or NTNCWS is determined to be nonvulnerable, based upon a vulnerability assessment.~~ A monitoring waiver for a groundwater sampling point shall be effective for a term not to exceed ~~six~~ 6 years. A monitoring waiver for a surface water sampling point shall be effective for a ~~three-year~~ 3-year term. The Department's decision to grant or deny a request for a monitoring waiver shall be in writing. The Department may grant a ~~use or susceptibility monitoring~~ waiver ~~after evaluating the following factors as follows:~~

1. ~~Knowledge of previous use (including transport, storage, or disposal) of the volatile organic chemical within the watershed or zone of influence of the system. If the Department determines that there has been no previous use of the volatile organic chemical within the watershed or zone of influence, a use waiver may be granted~~ Use waiver: The Department may grant a use waiver if the Department determines that there has been no previous use of the VOC (including transport, storage, or disposal) within the watershed or zone of influence of a well.
2. Susceptibility waiver: If previous use of the ~~volatile organic chemical~~ VOC is unknown or if it has been used previously, ~~then the following factors shall be used to determine whether a~~

~~susceptibility waiver is granted~~ the Department may grant a susceptibility waiver based upon a vulnerability assessment. The Department shall consider the following factors in deciding whether to grant or deny a susceptibility waiver:

- a. Previous analytical results,
  - b. The proximity of the CWS or NTNCWS to a potential point or nonpoint source of contamination. ~~Point sources include spills or leaks of chemicals at or near a water treatment plant or distribution system pipelines; or at manufacturing, distribution or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities~~ A point source of contamination includes a spill or leak of a chemical at or near a water treatment plant or distribution system pipeline, at a manufacturing, distribution or storage facility, or from a hazardous or municipal waste landfill or other waste handling or treatment facility.
  - c. The environmental persistence and transport of the ~~volatile organic chemical; VOC~~,
  - d. The number of persons served by the CWS or NTNCWS and the proximity of a smaller system to a larger system, and
  - e. How well the water source is protected against contamination. ~~Groundwater systems~~ The Department shall consider factors such as the depth of the well, the type of soil, and wellhead protection for a groundwater system and watershed protection for a surface water system. ~~Surface water systems shall consider watershed protection.~~
3. As a condition of a monitoring waiver for a groundwater sampling point, a CWS or NTNCWS shall take ~~one~~ 1 sample at the groundwater sampling point during the time the waiver is effective (i.e., ~~one~~ 1 sample every ~~six~~ 6 years). A CWS or NTNCWS ~~also~~ shall update its vulnerability assessment during the term of the waiver, considering the factors listed in subsection ~~(L)~~ (K)(2) ~~above~~. The Department may renew a waiver based upon an updated vulnerability assessment provided the assessment reconfirms that the CWS or NTNCWS is ~~nonvulnerable~~ not vulnerable to VOC contamination. If the Department does not reconfirm nonvulnerability within ~~three~~ 3 years of the initial determination, ~~then the waiver is invalidated~~ automatically terminates, and the CWS

or NTNCWS ~~is required to~~ shall sample annually at the groundwater sampling point in the next compliance period.

4. A CWS or NTNCWS ~~which~~ that receives a monitoring waiver for a surface water sampling point shall sample at the frequency specified by the Department (if any). A CWS or NTNCWS shall update its vulnerability assessment during each compliance period. The Department may renew a waiver based upon an updated vulnerability assessment provided the assessment reconfirms that the CWS or NTNCWS is ~~nonvulnerable~~ not vulnerable to VOC contamination. If the Department does not reconfirm nonvulnerability, ~~then the waiver is invalidated~~ automatically terminates and a CWS or NTNCWS ~~is required to~~ shall sample annually at the surface water sampling point in the next compliance period.

**R18-4-213. Vinyl Chloride; Monitoring Requirements**

- A. ~~A community water system [CWS] or a nontransient, noncommunity water system [NTNCWS] which~~ A CWS or NTNCWS that detects trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene at a groundwater sampling point shall monitor quarterly for vinyl chloride at that sampling point. If vinyl chloride is not detected in the first quarterly sample, ~~then~~ the Department may reduce the quarterly monitoring frequency for vinyl chloride to ~~one~~ 1 sample during each compliance period. The Department's decision to reduce monitoring frequency for vinyl chloride shall be in writing.
- B. A CWS or NTNCWS ~~which~~ that detects one of the ~~volatile organic chemicals~~ VOCs listed in subsection(A) at a surface water sampling point shall monitor for vinyl chloride at a frequency specified by the Department.

**R18-4-215. Synthetic Organic Chemicals: MCLs**

Water distributed by ~~a community water system or nontransient, noncommunity water system~~ CWS or NTNCWS shall not exceed the following ~~maximum contaminant levels~~ MCLs for ~~synthetic organic chemicals~~ SOCs:

<u>Contaminant</u>	<u>MCL (mg/L)</u>
Alachlor	0.002
Atrazine	0.003
Benzo(a)pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
2,4-D	0.07
Dalapon	0.2
Dibromochloropropane (DBCP)	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexyl)phthalate	0.006
Dinoseb	0.007

Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide (EDB)	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs) <u>(as decachlorobiphenyl)</u>	0.0005
Simazine	0.004
2,3,7,8-TCDD (Dioxin)	$3 \times 10^{-8}$
Toxaphene	0.003
2,4,5-TP (Silvex)	0.05

**R18-4-216. Synthetic Organic Chemicals; Monitoring Requirements**

- A. ~~Each community water system [CWS] and nontransient, noncommunity water system [NTNCWS] CWS and NTNCWS shall conduct monitoring~~ monitor to determine compliance with the ~~maximum contaminant levels~~ MCLs for ~~synthetic organic chemicals~~ the SOCs listed in R18-4-215. ~~Transient, noncommunity water systems are not required to monitor for synthetic organic chemicals~~ A TNCWS is not required to conduct monitoring for SOC.

- B. A CWS or NTNCWS shall conduct initial monitoring for ~~synthetic organic chemicals~~ SOCs in the monitoring year designated by the Department ~~according to the following schedule:~~ within the initial compliance period.
- ~~1. A CWS or NTNCWS with 150 or more service connections shall conduct initial monitoring to determine compliance with the maximum contaminant levels for all of the synthetic organic chemicals listed in R18-4-215 in the compliance period which begins January 1, 1993.~~
  - ~~2. A CWS or NTNCWS with less than 150 service connections shall conduct initial monitoring to determine compliance with the maximum contaminant levels for alachlor, atrazine, carbofuran, chlordane, 2,4-D, dibromochloropropane (DBCP), ethylene dibromide (EDB), heptachlor, heptachlor epoxide, lindane, methoxychlor, PCBs, pentachlorophenol, toxaphene, and 2,4,5-TP (Silvex) in the compliance period which begins January 1, 1993.~~
  - ~~3. A CWS or NTNCWS with less than 150 service connections shall conduct initial monitoring to determine compliance with the maximum contaminant levels for benzo(a)pyrene, dalapon, di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, dinoseb, diquat, endothall, endrin, glyphosate, hexachlorobenzene, hexachlorocyclopentadiene, oxamyl, picloram, simazine, and 2,3,7,8-TCDD (dioxin) in the compliance period that begins January 1, 1996.~~
- C. Each CWS and NTNCWS shall ~~conduct monitoring to determine compliance with the maximum contaminant levels for synthetic organic chemicals~~ monitor for SOCs at each sampling point as prescribed in R18-4-218.
- D. A water supplier may composite SOC samples ~~for synthetic organic chemicals~~ as prescribed in R18-4-219.
- E. Each CWS and NTNCWS shall take four consecutive quarterly samples at each sampling point during each compliance period. If no synthetic organic chemicals are detected at a sampling point during the initial compliance period, then the Department may reduce monitoring frequency in repeat compliance periods pursuant to subsection (G) below. The Department's decision to reduce monitoring frequency shall be in writing.
- F. A CWS or NTNCWS may use SOC monitoring data collected ~~after January 1, 1990, and prior to January 1, 1993~~ in the three years immediately prior to the initial monitoring year to satisfy initial monitoring

requirements for the initial compliance period provided the data are generally consistent with the requirements of this Section.

- G. If a CWS or NTNCWS does not detect a ~~synthetic organic chemical~~ SOC at a sampling point in the initial compliance period, the Department may reduce monitoring frequency at that sampling point in repeat compliance periods as follows:
1. For a CWS or NTNCWS ~~which~~ that serves more than 3,300 persons, the Department may reduce monitoring frequency to a minimum of ~~two~~ 2 quarterly samples in ~~one~~ 1 year at each sampling point during each repeat compliance period. Quarterly samples shall not be taken in consecutive quarters.
  2. For a CWS or NTNCWS ~~which~~ that serves 3,300 or fewer persons, the Department may reduce monitoring frequency to a minimum of ~~one~~ 1 sample at each sampling point during each repeat compliance period.
- H. If a CWS or NTNCWS detects a synthetic organic chemical listed in R18-4-215 (except atrazine, dibromochloropropane, ethylene dibromide and di(2-ethylhexyl)phthalate at a sampling point in a concentration that is greater than or equal to 50% of the maximum contaminant level for that synthetic organic chemical, then the system shall conduct quarterly monitoring for that synthetic organic chemical at that sampling point, beginning in quarter immediately following collection of the sample where the synthetic organic chemical was detected. If a CWS or NTNCWS detects atrazine, dibromochloropropane, ethylene dibromide, or di(2-ethylhexyl)phthalate at a sampling point in a concentration that is greater than the maximum contaminant level then the CWS or NTNCWS shall conduct quarterly monitoring for that contaminant. The CWS or NTNCWS shall continue quarterly monitoring at the sampling point until:
1. For groundwater sampling points, a minimum of two consecutive quarterly samples are taken and the concentration of the synthetic organic chemical in each sample is below the maximum contaminant level. If the initial detection which triggers quarterly monitoring is at a concentration which exceeds the maximum contaminant level for a synthetic organic chemical, then a groundwater system shall take a minimum of four consecutive quarterly samples at the sampling point and the concentration of the synthetic organic chemical in each sample is below the

maximum contaminant level.

2. For surface water sampling points, a minimum of four consecutive quarterly samples are taken and the concentration of the synthetic organic chemical in each sample is below the maximum contaminant level.
3. If the concentration of a synthetic organic chemical is below the maximum contaminant level for the minimum number of consecutive quarterly samples prescribed in subsections (H)(1) or (H)(2) above, then the Department may reduce monitoring frequency at the sampling point from quarterly to annually. The Department's decision to reduce monitoring frequency from quarterly to annually shall be in writing. If the Department reduces monitoring frequency to annually, a CWS or NTNCWS shall take the annual sample during the quarter which previously yielded the highest analytical result. A CWS or NTNCWS which has three consecutive annual samples with no detections of a synthetic organic chemical may submit a written request to the Department for a monitoring waiver according to subsection (M) below.
  - I. The Department may increase monitoring frequency, where necessary, to detect variations within a CWS or NTNCWS [e.g., fluctuations in concentration due to seasonal use, changes in water source]. The Department's decision to increase monitoring frequency shall be in writing.
  - J. If monitoring results in the detection of either heptachlor or heptachlor epoxide, ~~then~~ subsequent monitoring shall analyze for both ~~synthetic organic chemicals~~ SOCs.
  - K. ~~Compliance with the maximum contaminant level for a synthetic organic chemical shall be determined based upon the analytical results from each sampling point. The Department shall determine compliance with the MCL for a SOC from the analytical results from each sampling point as follows:~~
    1. For a CWS or NTNCWS ~~which~~ that samples quarterly or more frequently at a sampling point, ~~compliance is determined by the Department shall determine compliance from the running annual average of all samples taken at each the sampling point. If the running annual average is greater than the maximum contaminant level MCL, then the system is out of compliance. If any sample would cause causes the running annual average to be exceeded exceed the MCL, then the system is out of compliance immediately. Any sample below the detection reporting limit shall be~~

calculated as zero for purposes of determining the running annual average.

2. If a CWS or NTNCWS samples on an annual or less frequent basis at a sampling point, the system is out of compliance if the concentration of a ~~synthetic organic chemical~~ SOC in a single sample exceeds the ~~maximum contaminant level~~ MCL.
- L. The Department may require a confirmation sample. If the Department requires a confirmation sample, ~~then~~ the analytical ~~results~~ result from the confirmation sample shall be averaged with the analytical ~~results~~ result from the initial sample. ~~The average shall be used for determining compliance~~ Department shall use the average to determine compliance under subsection (K)(2).
- M. A CWS or NTNCWS may submit a written request to the Department for a waiver from the monitoring requirements for a ~~synthetic organic chemical~~ SOC. A monitoring waiver is effective for ~~one~~ 1 compliance period (~~i.e., three years~~). The Department's decision to grant a monitoring waiver shall be in writing. A CWS or NTNCWS shall reapply for a monitoring waiver in each subsequent compliance period. A CWS or NTNCWS ~~which that~~ receives a monitoring waiver is not required to monitor for a ~~synthetic organic chemical~~ the SOC during the term of the waiver. The Department may grant a monitoring waiver as follows:
1. Use waivers: The Department may grant a use waiver ~~based upon knowledge of previous use (including transport, storage, or disposal of the synthetic organic chemical within the watershed or zone of influence of the CWS or NTNCWS. If the Department determines that there has been no previous use of a synthetic organic chemical, a waiver may be granted. if the Department determines that there has been no previous use of the SOC (including transport, storage, or disposal) within the watershed or zone of influence of a well. If previous use of the synthetic organic chemical~~ SOC is unknown or if the ~~synthetic organic chemical~~ SOC has been used previously, ~~then a waiver may be granted~~ the Department may grant a susceptibility waiver based upon a vulnerability assessment.
  2. ~~Monitoring waiver based upon vulnerability assessment~~ Susceptibility waiver: The Department may grant a ~~monitoring waiver because a CWS or NTNCWS is determined to be nonvulnerable,~~ susceptibility waiver based upon the results of a vulnerability assessment. The Department shall

consider the following factors in ~~making the waiver determination~~ deciding whether to grant or deny a susceptibility waiver:

- a. Previous analytical results,
- b. The proximity of the CWS or NTNCWS to a potential point source or nonpoint source of contamination. ~~Point sources include spills and leaks of synthetic organic chemicals at or near a water treatment plant or distribution system, or at a manufacturing, distribution or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Nonpoint sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, homes, and gardens, and other land application uses; A point source of contamination includes a spill or leak of a SOC at or near a water treatment plant or distribution system pipeline, or at a manufacturing, distribution, or storage facility, or from a hazardous or municipal waste landfill, or from another waste handling or treatment facility. A nonpoint source includes the use of pesticides to control insect and weed pests on an agricultural area, forest, home, garden, or other land application use,~~
- c. The environmental persistence and transport of the ~~synthetic organic chemical~~ SOC,
- d. How well the water source is protected against contamination by ~~synthetic organic chemicals~~ the SOC due to such factors as geology and well design (e.g., depth to groundwater, type of soil and the integrity of the well casing),
- e. Elevated nitrate levels at the water supply source,
- f. Use of PCBs in equipment used in the production, storage, or distribution of water, and
- g. Wellhead protection assessments.

N. Each CWS or NTNCWS that monitors for PCBs shall analyze each sample using either EPA Method 505 or EPA Method 508. If PCBs are not detected (as one of seven Aroclors) in the sample in concentrations which exceed the reporting limits below, the CWS or NTNCWS is in compliance with the MCL for PCBs. If a PCB is detected (as one of seven Aroclors) in a concentration that exceeds the reporting limit for the Aroclor listed below, the sample shall be reanalyzed using EPA Method 508(A) to quantitate PCBs as

decachlorobiphenyl]. The Department shall determine compliance with the MCL for PCBs [as decachlorobiphenyl] from the EPA Method 508(A) analytical result.

<u>Aroclor</u>	<u>Reporting limit (mg/l)</u>
<u>1016</u>	<u>0.00008</u>
<u>1221</u>	<u>0.02</u>
<u>1232</u>	<u>0.0005</u>
<u>1242</u>	<u>0.0003</u>
<u>1248</u>	<u>0.0001</u>
<u>1254</u>	<u>0.0001</u>
<u>1260</u>	<u>0.0002</u>

#### **R18-4-217. Radiochemicals: MCLs and Monitoring Requirements**

~~A. Water distributed by a community water system [CWS] shall not exceed the following maximum contaminant levels:~~

- ~~1. 5 pCi/l for combined Radium-226 and Radium-228;~~
- ~~2. 15 pCi/l for gross alpha particle activity, including Radium-226 but excluding Radon and Uranium;~~
- ~~3. The average annual concentration of man-made beta particle and photon emitters shall not produce an annual dose equivalent to the total body or any internal organ greater than four millirem/year; and~~
- ~~4. Except for the radionuclides listed in this paragraph, the concentration of man-made beta particle and photon emitters causing four millirem total body or organ dose equivalents shall be calculated on the basis of a two liter per day drinking water intake using the 168-hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS Handbook 69, U.S. Department of Commerce, (as amended August, 1963 and no future editions), which is incorporated by reference and on file with the Office of the Secretary of State and the Department.~~

~~a. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any internal organ shall not exceed four millirem/year.~~

~~b. The following average annual concentrations shall be assumed to produce a total body or organ dose of four millirem per year:~~

<del>Radionuclide</del>	<del>Critical organ</del>	<del>pCi/L</del>
<del>Tritium</del>	<del>Total body</del>	<del>20,000</del>
<del>Strontium-90</del>	<del>Bone marrow</del>	<del>8</del>

~~B. A CWS shall monitor for gross alpha particle activity, Radium-226, and Radium-228 as follows:~~

~~1. A CWS shall monitor each source for radiochemical contaminants at four-year intervals. Initial sampling of a new water source for a CWS shall begin within 90 days of the introduction of the source and the analysis shall be completed within one year of the introduction of the source. Compliance shall be based on the analysis of an annual composite of four consecutive quarterly samples or the average of the analytical results of four samples obtained at quarterly intervals.~~

~~a. If the gross alpha particle activity exceeds five pCi/L, the same or an equivalent sample shall be analyzed for combined Radium-226 and Radium-228. In localities where the Department has determined that Radium-228 may be present in drinking water, Radium-226 and Radium-228 analyses are required when the gross alpha particle activity exceeds two pCi/L.~~

~~b. If the concentration of Radium-228 is below two pCi/L, a Radium-226 sample may be substituted for future combined Radium-226 and Radium-228 samples, provided that the Radium-226 level is less than three pCi/L.~~

~~2. For purposes of future monitoring, when the gross alpha concentration is less than 7.5 pCi/L, analysis of a single sample may be substituted for the quarterly sampling procedures required by paragraph (B)(1) above.~~

~~a. More frequent monitoring shall be conducted in the vicinity of mining or other operations when the Department determines that these operations may contribute alpha particle radioactivity to either surface water or groundwater.~~

- ~~b. More frequent monitoring shall be conducted when the Department determines that there is possible radiochemical contamination or that changes in the distribution system or treatment process occur which may increase the concentration of radioactivity in water.~~
- ~~c. A CWS using two or more sources having different concentrations of radioactivity shall monitor each source of water in addition to monitoring at a tap when ordered to do so by the Department.~~
- ~~d. A water supplier for a CWS shall conduct annual monitoring when the Radium-226 concentration exceeds three pCi/L.~~
- ~~3. If the maximum contaminant level for gross alpha particle activity or total radium as set forth in subsection (A) of this Section is exceeded, quarterly monitoring shall be required until:
  - ~~a. The annual average concentration no longer exceeds the maximum contaminant level due to one or more of the following:
    - ~~1. Treatment;~~
    - ~~2. Removal of source from service;~~
    - ~~3. An approved blend; or~~~~
  - ~~b. A monitoring schedule, which is a condition of a variance, exemption, compliance agreement or an enforcement action has become effective.~~~~
- ~~4. For a noncommunity water system utilizing surface water or groundwater, analyses for the purpose of determining compliance with subsection (A) of this Section, shall be completed as directed by the Department whenever a health hazard is identified due to a potential contamination of the water system by radiochemicals.~~
- ~~C. A CWS shall conduct monitoring for man-made radioactivity as follows:
  - ~~1. A CWS that is a surface water system which serves more than 100,000 persons and such other CWS as the Department finds is subject to potential health risks from manmade radioactivity shall monitor to determine compliance with the maximum contaminant levels for man-made radioactivity prescribed in subsections (A)(3) and (4) of this Section. A CWS shall complete analysis of a composite of four consecutive quarterly samples. Compliance with the maximum~~~~

contaminant levels for man-made radioactivity may be assumed without further analysis if the annual average concentration of gross beta particle activity is less than 50 pCi/L and if the annual average concentrations of Tritium and Strontium-90 are less than those listed in subsection (A)(4) of this Section, provided that, if both radionuclides are present, the sum of their annual dose equivalents to bone marrow shall not exceed four millirem/year.

a. If the gross beta particle activity exceeds 50 pCi/L, an analysis of the sample shall be performed to identify the major radioactive constituents present and the appropriate internal organ and total body doses shall be calculated to determine compliance with subsection (A)(3) and (4) of this Section.

b. A groundwater system shall be required to monitor for man-made radioactivity if the Department finds that there is possible man-made radioactive contamination or an increased level of such contamination.

2. A water supplier shall repeat the required monitoring for man-made radioactivity at four-year intervals.

3. The water supplier of a CWS which utilizes water that may be contaminated by effluents from nuclear facilities shall perform quarterly monitoring for gross beta particle and Iodine-131 radioactivity and annual monitoring for Strontium-90 and Tritium.

a. Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. If the gross beta particle activity in a sample exceeds 15 pCi/L, the same or an equivalent sample shall be analyzed for Strontium-89 and Cesium-134. If the gross beta particle activity exceeds 50 pCi/L, an analysis of the sample shall be performed to identify the major radioactive constituents present, and the appropriate internal organ and total body doses shall be calculated to determine compliance with the maximum contaminant levels prescribed in subsection (A) of this Section.

b. For Iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. More frequent monitoring shall be conducted at a frequency specified by

the Department if Iodine-131 is detected in the finished water:

- ~~c. Annual monitoring for Strontium-90 and Tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples.~~
- ~~d. The Department may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of manmade radioactivity by the water supplier provided the Department determines that such data are applicable to a community water system.~~
- ~~4. If a maximum contaminant level for man-made radioactivity is violated, a CWS shall conduct monthly monitoring until the average concentration for 12 consecutive months no longer exceeds the maximum contaminant level or until a monitoring schedule, which is a condition to a variance, exemption, compliance agreement, or enforcement action, has become effective.~~

A. Water distributed by a CWS shall not exceed the following MCLs:

- 1. 5 pCi/l for combined radium-226 and radium-228,
- 2. 15 pCi/l for gross alpha particle activity, including radium-226 but excluding radon and uranium, and
- 3. The average annual concentration of beta particle and photon radioactivity from man-made radionuclides shall not produce an annual dose equivalent to the total body or any internal organ  $\geq$  4 millirem/year.
  - a. Except for Tritium and Strontium-90, the concentration of man-made radionuclides causing 4 millirem total body or organ dose equivalents shall be calculated on the basis of a 2-liter per day drinking water intake using the 168-hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS Handbook 69, U.S. Department of Commerce, (as amended August, 1963 and no future editions), which is incorporated by reference and on file with the Office of the Secretary of State and the Department.
  - b. The following average annual concentrations of Tritium and Strontium-90 are assumed

to produce a total body or organ dose equivalent of 4 millirem per year:

<u>Radionuclide</u>	<u>Critical organ</u>	<u>pCi/L</u>
<u>Tritium</u>	<u>Total body</u>	<u>20,000</u>
<u>Strontium-90</u>	<u>Bone marrow</u>	<u>8</u>

c. If 2 or more radionuclides are present, the sum of their annual dose equivalents to the total body or to any internal organ shall not exceed 4 millirem/year.

B. A CWS shall monitor for gross alpha particle activity, radium-226, and radium-228 as follows:

1. A CWS shall monitor each sampling point as prescribed in R18-4-218 once every 4 years. A CWS shall take 4 consecutive quarterly samples at each sampling point for gross alpha particle radioactivity, radium-226, and radium-228 analysis.
2. The Department shall determine compliance with the MCLs in subsections (A)(1) and (A)(2) from the analytical results of a composite sample composed of 4 consecutive quarterly samples or the average of the analytical results of 4 consecutive quarterly samples .
3. A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analyses provided that the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 % (1.65 s where s is the standard deviation of the net counting rate of the sample).
  - a. If a gross alpha particle activity measurement exceeds 5 pCi/L, the same sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds 3 pCi/L, the same sample shall be analyzed for radium-228.
  - b. If a gross alpha particle activity measurement exceeds 15 pCi/L, the same sample shall be analyzed for uranium and the uranium result shall be subtracted from the gross alpha particle activity measurement to determine compliance with subsection (A)(2).
  - c. In localities where radium-228 may be present in drinking water, the Department may require radium-226 and radium-228 analyses if the gross alpha particle activity exceeds 2 pCi/L.

C. If the MCL for gross alpha particle activity or combined radium-226 and radium-228 is exceeded, the CWS

shall monitor quarterly at the sampling point until a monitoring schedule that is a condition of a variance, exemption, compliance agreement, or enforcement action is effective or the annual average concentration no longer exceeds the MCL due to one or more of the following:

1. Treatment.
2. Removal of a source from service, or
3. An approved blending plan.

D. The Department may order a CWS to conduct more frequent monitoring for gross alpha particle activity, radium-226, or radium-228 if the Department determines one of the following:

1. The CWS is in the vicinity of mining or other operations that may contribute alpha particle radioactivity to either surface or groundwater sources of drinking water,
2. There is possible radiochemical contamination of surface or groundwater sources of drinking water,
3. Changes in the distribution system or treatment process occur that may increase the concentration of radioactivity in drinking water, or
4. The Department may order a CWS to conduct annual monitoring for gross alpha particle radioactivity, radium-226, or radium-228 at a sampling point if the concentration of radium-226 exceeds 3 pCi/L.

E. The Department may reduce monitoring for gross alpha particle radioactivity, radium-226, or radium-228 as follows:

1. The Department may allow a CWS to substitute a single annual sample for the 4 consecutive quarterly samples prescribed in subsection (B) annual record establishes that the average annual concentration is less than ½ the MCLs prescribed in subsection (A).
2. The Department may allow a CWS to stop monitoring for radium-228 if:
  - a. The CWS has monitored radium-228 at least once using the quarterly monitoring procedure prescribed in subsection (B), and
  - b. The radium-226 concentration is < 3 pCi/L.

F. A CWS shall take 4 consecutive quarterly samples as prescribed in subsection (B) at the point-of-entry to

the distribution system within 1 year of the introduction of a new water source.

G. The Department may order a CWS that uses 2 or more sources that are combined before the point-of-entry into the distribution system and that have different concentrations of radioactivity to monitor each source and to monitor the blended water at the point-of-entry.

H. A CWS that is a surface water system that serves more than 100,000 persons and any CWS that the Department finds subject to potential health risks from man-made radioactivity shall monitor for gross beta particle radioactivity, Tritium, and Strontium-90 as follows:

1. A CWS that is a surface water system that serves more than 100,000 persons shall monitor at each surface water sampling point as prescribed in R18-4-218. A CWS that the Department determines is subject to potential health risks from man-made radioactivity shall monitor at sampling points designated by the Department.

2. A CWS shall take 4 consecutive quarterly samples at each sampling point for gross beta particle radioactivity, Tritium, and Strontium-90 analysis once every four years.

a. If the average annual concentration of gross beta particle radioactivity < 50 pCi/L, the sample shall be analyzed to determine the concentrations of Tritium and Strontium-90. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average annual concentration of gross beta particle radioactivity is < 50 pCi/L, the average annual concentration of Tritium is < 20,000 pCi/L, the average annual concentration of Strontium-90 is < 8 pCi/L, and the sum of the annual dose equivalents for Tritium and Strontium-90 is less than 4 millirem / year.

b. If gross beta particle radioactivity > 50 pCi/L, the sample shall be analyzed to identify the major radioactive constituents present and the appropriate internal organ and total body doses shall be calculated to determine compliance with subsection (A)(3).

3. A CWS that utilizes water that may be contaminated by effluent from a nuclear facility shall monitor for gross beta particle radioactivity, Iodine-131, Strontium-90, and Tritium as follows:

a. A CWS shall monitor monthly for gross beta particle radioactivity. Compliance shall be based upon the analysis a composite sample made up of 3 monthly samples or the average

concentration of 3 monthly samples.

- i. If the concentration of gross beta particle radioactivity > 15 pCi/L, the same sample shall be analyzed for Strontium-89 and Cesium-134. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average concentration of gross beta particle radioactivity is < 50 pCi/L, the average concentration of Cesium-134 is < 80 pCi/L, the average concentration of Strontium-89 is < 80 pCi/L, and the sum of the annual dose equivalents for Strontium-89 and Cesium-134 is < 4 millirem / year.
- ii. If the concentration of gross beta particle radioactivity > 50 pCi/L, the same sample shall be analyzed to identify the man-made radionuclides that are present. The internal organ and total body dose equivalents shall be calculated for the man-made radionuclides that are present to determine compliance with the MCL prescribed in subsection (A)(3).

b. A CWS shall take a composite of 5 consecutive daily samples once each quarter for Iodine-131 analysis. If Iodine-131 is detected, the CWS shall conduct more frequent monitoring at a frequency designated by the Department. If the concentration of Iodine-131 in the composite sample is > 3 pCi / L, the CWS is out of compliance.

c. A CWS shall take 4 consecutive quarterly samples for Strontium-90 and Tritium analyses each year. Compliance shall be based upon the analysis of a composite sample or the annual average concentration of 4 consecutive quarterly samples. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average annual concentration of Tritium is < 20,000 pCi/L, the average annual concentration of Strontium-90 is < 8 pCi/L , and the sum of the annual dose equivalents for Tritium and Strontium-90 is < than 4 millirem / year.

d. The Department may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the water supplier provided the Department determines that such data are applicable to a

community water system.

4. A CWS that violates a MCL for man-made radioactivity shall monitor monthly until the average concentration for 12 consecutive months no longer exceeds the MCL or the Department specifies a monitoring schedule as a condition to a variance, exemption, compliance agreement, or enforcement action.
5. A CWS that is a surface water system shall monitor at surface water points-of-entry. If the Department determines that a CWS is subject to potential health risk from man-made radioactivity the CWS shall monitor at points-of-entry designated by the Department.

**R18-4-218. Sampling sites**

- A. A public water system shall ~~conduct monitoring~~ monitor to determine compliance with ~~maximum contaminant levels~~ MCLs at sampling points as follows:
  1. At each point-of-entry to the distribution system that is representative of water from each well after treatment; and
  2. At each point-of-entry to the distribution system that is representative of each surface water source after treatment or in the distribution system at a point located before the first service connection ~~which~~ that is representative of each surface water source after treatment.
- B. If a public water system draws water from more than one source and the sources are combined before distribution, the public water system shall sample at points-of-entry to the distribution system during periods of normal operating conditions.
- C. A public water system shall take each sample in subsequent monitoring periods at the same sampling point unless conditions make another sampling point more representative of water from each source after treatment. ~~If a sampling site is changed in a subsequent monitoring period, then the water supplier shall report the new sampling site to the Department and explain the reason for the change in location.~~
- D. A public water system shall sample for total coliforms at sampling sites ~~as~~ identified in a written site sampling plan ~~which~~ that is subject to Department review and approval.
- E. A CWS shall sample for total trihalomethanes at sampling points as prescribed in R18-4-214.

#### **R18-4-219. Sample compositing**

- A. A public water system ~~may reduce the total number of samples which must be analyzed to determine compliance with a maximum contaminant level by compositing. Composite samples from a maximum of 5 samples are allowed~~ may composite up to 5 samples provided that the detection limit of the method used for analysis is less than ~~one-fifth of the maximum contaminant level~~ 1/5 of the MCL for the contaminant.
- B. ~~Compositing of samples~~ Sample compositing shall be done by a licensed laboratory.
- C. ~~Public water systems serving more than 3300 persons may composite samples from sampling points within a single system. Public water systems serving 3300 or fewer persons may composite samples from sampling points in different public water systems. A public water system may composite up to 5 samples from sampling sites within the same public water system. A public water system serving 3,300 or fewer persons may composite samples with samples taken from other public water systems serving 3,300 or fewer persons.~~
- D. A public water system shall take follow-up samples if any of the following occurs:
1. Inorganic chemicals: If the concentration of an inorganic chemical in a composite sample is ~~greater than or equal to one-fifth of the maximum contaminant level~~ \$ 1/5 the MCL, ~~then a public water system shall take~~ a follow-up sample ~~shall be taken~~ within 14 days at each sampling point included in the composite sample. The follow-up samples shall be analyzed for ~~any the~~ inorganic chemical ~~which exceeded one-fifth of the maximum contaminant level~~ that exceeded 1/5 of the MCL in the composite sample.
  2. Volatile organic chemicals VOCs: ~~If any volatile organic chemical in a composite sample is detected~~ a VOC is detected in a composite sample in a concentration ~~\$ 0.0005 mg/L~~, ~~then a follow-up sample shall be taken~~ a public water system shall take a follow-up sample within 14 days at each sampling point that was included in the composite sample. The follow-up samples shall be analyzed for the ~~volatile organic chemical~~ VOC that was detected in the composite sample ~~within 14 days of sample collection~~ in a concentration \$ 0.0005 mg/L.
  3. Synthetic organic chemicals SOCs: ~~If any synthetic organic chemical~~ a SOC is detected in a composite sample ~~in a concentration that exceeds the detection reporting limit for that synthetic~~

~~organic chemical SOC~~ prescribed in ~~Appendix B R18-4-104(U)(2)(c)~~, then a follow-up sample shall be taken and analyzed within 14 days from each sampling point included in the composite sample. The follow-up samples shall be analyzed for the ~~synthetic organic chemical SOC~~ that was detected in the composite sample in a concentration that exceeded the reporting limit.

4. If ~~duplicates a duplicate~~ of the original sample ~~taken from each sampling point used that was included~~ in the composite sample ~~are is~~ available, then a public water system may use the ~~duplicates duplicate~~ instead of taking a follow-up samples sample. ~~Duplicates~~ The duplicate sample shall be analyzed and the results reported to the Department within 14 days of sample collection.

E. Special compositing rules:

1. ~~Asbestos: Samples taken at points of entry to the distribution system shall not be composited with a tap sample.~~

~~2.1.~~ Compositing VOC samples prior to GC analysis:

- a. Add 5 ml or equal larger amounts of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions shall be taken to maintain zero headspace in the syringe. If less than 5 samples are used for compositing, a proportionately smaller syringe may be used.
- b. Samples shall be cooled at 4EC to minimize volatilization losses.
- c. The composite sample shall be well mixed. A 5 ml aliquot shall be drawn from the composite sample for GC analysis.
- d. Sample introduction, purging, and desorption steps shall be as prescribed in the approved analytical method.

~~3.2.~~ Compositing samples prior to GC/MS analysis:

- a. Inject 5 ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25 ml purging device using the sample introduction technique described in the approved method.
- b. The total volume in the purging device shall be 25 ml.

- c. Purge and desorb as prescribed in the approved method.
3. Vinyl chloride samples shall not be composited.
  4. Samples that are composited cannot be screened for PCBs using EPA Method 505 or EPA Method 508. Samples that are composited for PCB analysis shall be analyzed using EPA Method 508A.
  5. Tap water samples for lead and copper shall not be composited. Source water samples for lead may be composited provided the method detection limit for the analytical method used is achieved. Source water samples for copper may be composited provided the method detection limit for the analytical method used is achieved.
  6. Toxaphene samples shall not be composited unless the analytical method has a method detection limit that is  $\leq 0.0006$  mg/L.

**R18-4-302. Filtration**

- A. A surface water system shall ~~provide treat water by~~ filtration.
- B. Conventional or direct filtration: The turbidity ~~level of samples~~ of filtered water from a surface water system that uses conventional filtration or direct filtration shall be less than or equal to  $\leq 0.5$  NTU in at least 95% of the measurements taken each month. The turbidity ~~level of samples~~ of filtered water shall not exceed 5 NTUs.
- C. Slow sand filtration: The turbidity ~~level of samples~~ of filtered water from a surface water system using ~~slow sand filtration~~ shall be less than or equal to one  $\leq 1$  NTU in at least 95% of the measurements taken each month. The turbidity ~~level of samples~~ of filtered water shall not exceed 5 NTUs.
- D. Diatomaceous earth filtration: The turbidity ~~level of samples~~ of filtered water from a surface water system using diatomaceous earth filtration shall be less than or equal to one  $\leq 1$  NTU in at least 95% of the measurements taken each month. The turbidity ~~level of samples~~ of filtered water shall not exceed 5 NTUs.
- E. Other filtration technologies: A surface water system may use a filtration technology other than conventional filtration, direct filtration, slow sand filtration, or diatomaceous earth filtration if the water supplier demonstrates to the Department, through pilot plant studies or other means, that the filtration

technology, in combination with disinfection, consistently achieves a 99.9% (3-log) removal and inactivation of *Giardia lamblia* cysts and a 99.99% (4-log) removal and inactivation of viruses. The turbidity level of samples of filtered water from a surface water system that uses a filtration technology other than conventional filtration, direct filtration, slow sand filtration or diatomaceous earth filtration shall be less than or equal to # 1 NTU in at least 95% of the measurements taken each month. The turbidity level of samples of filtered water shall not exceed 5 NTUs.

F. ~~A surface water system shall monitor the turbidity of filtered water as follows:~~

~~1. Turbidity measurements shall be performed on samples of filtered water. Frequency of turbidity monitoring: A surface water system shall take a grab sample and measure the turbidity of filtered water at least once every 4 hours that a water treatment plant is operating or monitor turbidity continuously. If a surface water system continuously monitors the turbidity of filtered water, the water supplier shall calibrate its turbidity monitoring equipment regularly in accordance with the manufacturer's specifications.~~

~~a. A surface water system may substitute continuous turbidity monitoring for grab sample monitoring provided continuous turbidity monitoring equipment is calibrated regularly in accordance with the manufacturer's specifications:~~

~~2. Filtered water turbidity shall be measured at one of the following locations:~~

G. Location of turbidity monitoring: A surface water system shall monitor the turbidity of filtered water at one of the following locations:

~~a.~~ 1. Combined filter effluent prior to entry into a clearwell,

~~b.~~ 2. Clearwell effluent,

~~c.~~ 3. Water treatment plant effluent, or

~~d.~~ 4. Another location that is approved by the Department.

H. Reduced turbidity monitoring: Upon the written request of a water supplier, the Department may reduce the frequency of grab sampling for turbidity if the Department determines that less frequent turbidity monitoring is sufficient to indicate effective filtration performance. A Department decision to reduce turbidity monitoring shall be in writing. The Department may reduce turbidity monitoring as follows:

- ~~3.1.~~ Upon the written request of a water supplier, ~~the~~ The Department may reduce the frequency of grab sampling by a surface water system using slow sand filtration or a filtration technology other than conventional filtration, direct filtration, or diatomaceous earth filtration to once per day ~~if the~~ Department determines that less frequent turbidity monitoring is sufficient to indicate effective filtration performance. ~~The Department's decision to allow less frequent turbidity monitoring shall be in writing.~~
- ~~4.2.~~ Upon the written request of a water supplier, ~~the~~ The Department may reduce the frequency of grab sampling by a surface water system that serves 500 or fewer persons to once per day, regardless of the type of filtration used, ~~if the Department determines that less frequent turbidity monitoring is sufficient to indicate effective filtration performance.~~ The Department's decision to allow less frequent turbidity monitoring shall be in writing.

**R18-4-303. Disinfection**

- A. A surface water system shall provide disinfection sufficient to ensure that the total treatment processes of the system achieve at least a 99.9 % (3-log) inactivation and removal of *Giardia lamblia* cysts and at least a 99.99 % (4-log) inactivation and removal of viruses. ~~A water supplier shall submit a treatment technique compliance study to the Department which demonstrates that the total treatment processes of the surface water system achieve the *Giardia lamblia* and virus removal and inactivation rates prescribed in this subsection. The water supplier shall submit an additional treatment technique compliance study if there is a change in the treatment process which may affect the percent removal or inactivation of *Giardia lamblia* cysts or viruses or an additional or different source is developed.~~
- B. The residual disinfectant concentration in water entering the distribution system (measured as free chlorine, combined chlorine, or chlorine dioxide) shall be not less than 0.2 mg/L for more than ~~four~~ 4 consecutive hours.
1. A surface water system that serves more than 3,300 persons per day shall continuously monitor the residual disinfectant concentration in water entering the distribution system. If there is a failure of the continuous monitoring equipment, ~~then~~ a surface water system shall ~~conduct grab sampling~~

~~take grab samples every four~~ 4 hours to monitor residual disinfectant concentration. A surface water system shall repair or replace the continuous monitoring equipment within ~~five~~ 5 days of initial failure.

2. A surface water system that serves 3,300 or fewer persons per day may take grab samples to monitor the residual disinfectant concentration in water entering the distribution system instead of continuous monitoring.

a. ~~If grab samples are taken, a~~ The surface water system shall sample each day at the following frequency:

<u>System size by population</u>	<u>Number of grab samples / day<sup>1</sup></u>
500 or less	1
501 to 1,000	2
1,001 to 2,500	3
2,501 to 3,300	4

<sup>1</sup> Grab samples shall not be taken at the same time. Sampling intervals are subject to Department review and approval.

b. If the residual disinfectant concentration in a grab sample is ~~below~~  $\leq 0.2$  mg/l, ~~then~~ a surface water system shall increase the frequency of grab sampling to once every ~~four~~ 4 hours. The surface water system shall continue to take a grab sample every ~~four~~ 4 hours until the residual disinfectant concentration in water entering the distribution system is ~~greater than or equal to~~  $\geq 0.2$  mg/L.

C. The residual disinfectant concentration of water in the distribution system (measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide) shall be detectable in 95% or more of the samples each month for any ~~two~~ 2 consecutive months that a surface water system serves water to the public.

1. ~~Heterotrophic bacteria in the distribution system, as heterotrophic plate count (HPC), may be measured in lieu of~~ A surface water system may measure the concentration of heterotrophic bacteria in water in the distribution system as heterotrophic plate count (HPC) instead of measuring the residual disinfectant concentration in water in the distribution system. Water in the

distribution system with a heterotrophic bacteria concentration that is ~~less than or equal to~~ #\_500/ml (measured as HPC) is deemed to have a detectable residual disinfectant concentration.

2. ~~To~~ The water supplier shall calculate the value "V in the following formula to determine whether there is a detectable residual concentration in water in the distribution system in 95% of the samples taken each month; the value "V" in the following formula shall be calculated. The value "V" shall not exceed ~~five 5~~ in each month for any two 2 consecutive months:

$$V = \frac{c/d/e}{d/b} \times 100$$

Where:

- a = Number of instances ~~where~~ the residual disinfectant concentration is measured;
- b = Number of instances ~~where~~ the residual disinfectant concentration is not measured but HPC is measured;
- c = Number of instances ~~where~~ the residual disinfectant concentration is measured but not detected and no HPC is measured;
- d = Number of instances ~~where~~ no residual disinfectant concentration is detected and ~~where~~ the HPC is greater than 500/ml; and
- e = Number of instances ~~where~~ the residual disinfectant concentration is not measured and HPC is greater than 500/ml.

3. The residual disinfectant concentration in water in the distribution system shall be measured at the same sampling sites and at the same time as total coliform sampling.

D. A water supplier shall submit a treatment technique compliance study to the Department that demonstrates the total treatment processes of the surface water system achieve the *Giardia lamblia* and virus removal and inactivation rates prescribed in subsection (A). The water supplier shall submit an additional treatment technique compliance study if there is a change in the treatment process that may affect the percent removal or inactivation of *Giardia lamblia* cysts or viruses or an additional or different source is developed.

**R18-4-307. Lead and Copper; Requirements for Small and Medium Water Systems**

- A. Except as provided in subsection (B) ~~of this Section, a small and or medium water systems system~~ shall complete the following treatment technique steps within the indicated time periods:
1. A small or medium water system shall conduct initial tap water monitoring for lead and copper for ~~two~~ 2 consecutive ~~six-month~~ 6-month monitoring periods or until the system exceeds a lead or copper action level.
  2. A small or medium water system that exceeds an action level for lead or copper shall ~~conduct water quality parameter monitoring~~ monitor for water quality parameters as prescribed in R18-4-311. A small or medium water system shall complete monitoring for water quality parameters in the same ~~six-month~~ monitoring period ~~during which that~~ the system exceeds the action level ~~for lead or copper~~.
  3. A small or medium water system ~~which that~~ exceeds an action level for lead or copper shall recommend optimal corrosion control treatment to the Department ~~in the six-month monitoring period immediately following the completion of the six-month monitoring period in which the system exceeded the action level for copper~~ within 6 months after the monitoring period that the system exceeded the action level.
  4. Within ~~a~~ 1 year after ~~completion of the monitoring period in which that~~ a small or medium water system exceeded an action level for lead or copper, the Department shall determine whether ~~to require the small or medium water system to perform~~ a corrosion control study is necessary. If the Department requires a ~~small or medium water system to perform~~ a corrosion control study, ~~then~~ the small or medium system shall complete and submit the study to the Department within 18 months of the date ~~that the Department determines that a corrosion control study~~ one is necessary ~~and submit the study to the Department~~. The Department shall designate the optimal corrosion control treatment for the small or medium water system within ~~six~~ 6 months of ~~the date of~~ submittal receipt of the corrosion control study.
  5. If the Department does not require a small or medium water system to perform a corrosion control study, the Department shall designate optimal corrosion control treatment for the system ~~within~~

the following time-frames as follows:

- a. For medium water systems, within 18 months after the system exceeds an action level ~~for lead or copper~~; or
  - b. For small water systems, within 24 months after the system exceeds an action level ~~for lead or copper~~.
6. A small or medium water system shall install optimal corrosion control treatment within 24 months after the Department designates ~~such optimal corrosion control~~ treatment.
  7. A small or medium water system shall complete follow-up tap water monitoring for lead and copper and follow-up monitoring for water quality parameters, as prescribed in R18-4-313, within 36 months after the Department designates optimal corrosion control treatment.
  8. The Department shall designate water quality parameters for optimal corrosion control within ~~six~~ 6 months of completion of follow-up monitoring.
  9. A small or medium water system shall ~~operate in compliance~~ comply with the designated water quality parameters for optimal corrosion control and continue ~~to conduct~~ follow-up tap water monitoring for lead and copper and ~~follow-up monitoring~~ for water quality parameters as prescribed in R18-4-313.
- B. A small or medium water system is deemed to have optimized corrosion control and is not required to complete the treatment technique steps identified in subsection (A) ~~of this Section~~ if the small or medium water system satisfies one of the following criteria:
1. A small or medium water system does not exceed the action level for lead or copper ~~during each of two~~ for 2 consecutive 6-month monitoring periods.
  2. A small or medium water system demonstrates to the Department that it has conducted corrosion control activities that are equivalent to the corrosion control steps prescribed in subsection (A). ~~If the Department makes an equivalency determination, the Department shall provide written notice to the small or medium water system which explains the basis for its determination. The Department shall provide written notice to the small or medium water system that explains the basis for its determination that the system's corrosion control steps are equivalent. The~~

Department shall designate the water quality parameters ~~representing~~ that represent optimal corrosion control for the small or medium water system. A small or medium water system shall provide the following information to the Department to support a request for an equivalency determination:

- a. The results of all samples collected for lead, copper, pH, alkalinity, calcium, conductivity, water temperature, orthophosphate [when an inhibitor containing a phosphate compound is used], and silicate [when an inhibitor containing a silicate compound is used] before and after evaluation of corrosion control treatment.
  - b. A report ~~which~~ that explains the test methods used by the small or medium water system to evaluate the effectiveness of each of the following corrosion control treatments:
    1. Alkalinity and pH adjustment,
    2. Calcium hardness adjustment, and
    3. The addition of a phosphate or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.
  - c. The report shall include the results of all tests conducted and the basis for the small or medium water system's selection of optimal corrosion control treatment.
  - d. A report ~~which~~ that explains how corrosion control treatment has been installed and how it is being maintained to ensure minimal lead and copper concentrations at tap, and
  - d. The results of tap water monitoring samples for lead and copper collected in accordance with requirements prescribed at R18-4-310. A small or medium water system shall conduct tap water monitoring for lead and copper once every ~~six~~6 months for at least ~~one~~ 1 year after corrosion control treatment has been installed.
3. A small or medium water system is deemed to have optimized corrosion control if the system submits the analytical results of tap water monitoring for lead and copper conducted in accordance with R18-4-310 and source water monitoring conducted in accordance with R18-4-314 ~~which~~ that demonstrate that for ~~two~~ 2 consecutive ~~six-month~~ 6-month monitoring

periods, the difference between the 90th percentile tap water lead level, as computed according to R18-4-308, and the highest source water lead concentration is ~~less than~~  $\leq 0.005$  mg/L.

- C. ~~Any~~ A small or medium water system that is required to complete the corrosion control steps prescribed in subsection (A) ~~because of an exceedance of an action level for lead or copper~~ may cease completing the steps whenever the system does not exceed the action level for lead or copper during each of ~~two~~ 2 consecutive ~~six-month~~ 6-month monitoring periods and submits the analytical results to the Department. If a small or medium water system ~~thereafter~~ subsequently exceeds an action level for lead or copper during ~~any a~~ a monitoring period, the system (or the Department) shall recommence completion of the applicable corrosion control steps, beginning with the first step ~~which that~~ that was not previously completed in its entirety. The Department may require a small or medium water system to repeat steps previously completed ~~by the system where~~ if the Department determines that repeating a step is necessary to implement properly the corrosion control requirements of this Section. The Department shall notify the small or medium water system in writing of ~~such a~~ the determination and explain the basis for its decision.
- D. The requirement ~~for any that a~~ that a small or medium water system ~~to~~ implement corrosion control treatment steps if an action level for lead or copper is exceeded ~~includes~~ applies to a small and or medium water systems ~~system which are been deemed to have that has~~ system which has optimized corrosion control treatment under subsection (B)(1) ~~of this Section and which thereafter exceed~~ that subsequently exceeds an action level for lead or copper.
- E. A small or medium water system ~~which that~~ that exceeds an action level for lead or copper shall conduct source water monitoring as prescribed in R18-4-314.
- F. A small or medium water system ~~which that~~ that exceeds the action level for lead after implementation of corrosion control treatment or source water treatment shall comply with the lead service line replacement requirements prescribed in R18-4-315.
- G. A small or medium water system ~~which that~~ that exceeds the action level for lead shall comply with the public education requirements for lead prescribed in R18-4-316.

**R18-4-310. Lead and Copper; Tap Water Monitoring**

A. Each ~~large, medium, and small~~ public water system shall conduct tap water monitoring for lead and copper as follows:

1. Each A large water system shall conduct initial tap water monitoring for lead and copper during ~~two~~ 2 consecutive ~~six-month~~ 6-month monitoring periods.
2. Each A small ~~and or~~ medium water system shall conduct initial tap water monitoring for lead and copper during ~~two~~ 2 consecutive ~~six-month~~ 6-month monitoring periods ~~unless the small or medium water system exceeds an action level for lead and copper during the first six-month monitoring period.~~ If a small or medium water system exceeds an action level for lead and copper ~~in the first six-month monitoring period then~~ a monitoring period, the system shall implement corrosion control treatment steps as prescribed in R18-4-307(A)(2-9).

B. The ~~first six-month~~ initial 6-month monitoring period for ~~large, medium, and small~~ water systems shall begin on the following dates:

<u>System size by number of people served</u>	<u>First 6-month monitoring period begins on:</u>
> 50,000 [large water systems]	January 1, 1992
3,301 to 50,000 [medium water systems]	July 1, 1992
# 3,300 [small water systems]	July 1, 1993

C. Each ~~large, medium, and small~~ public water system shall collect one tap water sample for lead and copper from the following number of sampling sites during each monitoring period:

<u>System size (by population)</u>	<u>Number of samples</u>
>100,000	100
10,001 to 100,000	60
3,301 to 10,000	40
501 to 3,300	20
101 to 500	10
# 100	5

D. All tap water samples for lead and copper, with the exception of lead service line samples, shall be first-draw samples.

1. ~~Each~~ A first-draw tap water sample for lead and copper shall be ~~one~~ 1 liter in volume and shall have stood motionless in the plumbing system of each sampling site for at least ~~six~~ 6 hours. ~~First-draw samples~~ A first-draw sample from residential housing shall be collected from the cold-water kitchen tap or bathroom sink tap. ~~First-draw samples~~ A first-draw sample from a non-residential building shall be collected at an interior tap from which water is typically drawn for consumption. ~~First-draw samples~~ A first-draw sample may be collected by the ~~system water supplier~~ or the system water supplier may allow ~~residents~~ a resident to collect ~~first-draw samples~~ a first-draw sample after providing instructions to the resident on proper sampling procedures. If a system water supplier allows residents to perform sampling, the system may not challenge the accuracy of the sampling results based on alleged errors in sample collection.
  2. Each lead service line sample shall be ~~one~~ 1 liter in volume and shall have stood motionless in the lead service line for at least ~~six~~ 6 hours. Lead service line samples shall be collected in one of the following ~~three~~ ways:
    - a. At a tap after flushing the volume of water between the tap and the lead service line. The volume of water that is flushed shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;
    - b. Tapping directly into the lead service line; or
    - c. If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.
  3. A water system shall collect each first-draw tap water sample in subsequent monitoring periods from the same sampling site ~~from which~~ it collected a previous sample. If a system cannot gain entry to a sampling site in order to collect a follow-up tap water sample, the system may collect the follow-up tap water sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria and is within reasonable proximity of the original sampling site.
- E. A small or medium water system ~~which~~ that does not exceed an action level for lead or copper in the initial ~~six-month~~ 6-month monitoring period shall continue tap water monitoring for ~~another~~ a consecutive ~~six-~~

~~month~~ 6-month monitoring period. If the small or medium water system does not exceed the action level for lead and copper in ~~two~~ 2 consecutive ~~six-month~~ 6-month monitoring periods, ~~then~~ the system may make a written request to the Department to reduce the frequency of tap water monitoring ~~for lead and copper~~ to once per year. The small or medium water system also may request a reduction in the number of samples taken as prescribed in subsection (E)(1) ~~below~~.

1. A small or medium water system conducting reduced monitoring shall collect the following number of samples per year:

<u>System size (Number of persons served)</u>	<u>Number of samples</u>
10,001 - 50,000	30
3,301 - 10,000	20
501 - 3,300	10
101 - 500	5
# 100	5

2. A small or medium water system that does not exceed the action levels for lead and copper for ~~three~~ 3 consecutive years of monitoring may submit a written request to the Department to further reduce the frequency of tap water monitoring for lead and copper to once every ~~three~~ 3 years. A small or medium water system ~~which~~ that samples annually or less frequently shall conduct tap water monitoring for lead and copper during the months of June, July, August, or September in the same calendar year.
3. A small or medium water system that reduces the frequency of monitoring and the number of samples taken shall collect samples from sites included in the pool of targeted sampling sites.
4. If a small or medium water system that is subject to reduced monitoring exceeds an action level for lead or copper, ~~then~~ the system shall resume tap water monitoring at the frequency specified in subsection (A) ~~of this Section~~ and collect the number of samples specified in subsection (C) ~~of this Section~~.

- F. The Department and the public water system shall consider the results of tap water monitoring for lead and copper conducted by ~~systems~~ the system in addition to the minimum requirements of this Section ~~shall be~~

considered by the system and the Department in making any treatment technique determinations required by this Article.

G. A small or medium water system ~~which that~~ exceeds an action level for lead or copper shall comply with the following:

1. Water quality parameter monitoring requirements prescribed at R18-4-311.
2. Source water monitoring requirements prescribed at R18-4-314.
3. ~~A small or medium water system which exceeds the action level for lead shall comply with the lead~~ Lead public education requirements prescribed at R18-4-316 if the system exceeds the action level for lead.

H. A large water system ~~which that~~ exceeds an action level for lead or copper shall comply with the following:

1. Source water monitoring requirements prescribed at R18-4-314.
2. ~~A large water system which exceeds the action level for lead shall comply with the lead~~ Lead public education requirements prescribed in R18-4-316 if the system exceeds the action level for lead.
3. ~~A large water system which exceeds the action level for lead after installation of corrosion control treatment and source water treatment shall comply with the lead~~ Lead service line replacement requirements prescribed in R18-4-315 if the system exceeds the action level for lead after installation of corrosion control treatment and source water treatment.

I. ~~A large, medium, or small~~ public water system that exceeds the action level for lead shall offer to sample the tap water of any customer who requests it. The system is not required to pay for the collection or analysis of the sample. Any sample that is collected pursuant to this paragraph shall not be used for purposes of determining compliance.

**R18-4-311. Lead and Copper; ~~Initial Monitoring for Water Quality Parameters~~ Water Quality Parameter Monitoring**

A. ~~Each~~ A large water system shall ~~conduct initial monitoring~~ monitor for water quality parameters ~~regardless of whether an action level for lead or copper is exceeded.~~ ~~Each~~ A small ~~and or~~ medium water system shall

~~conduct initial monitoring~~ monitor for water quality parameters only if the system exceeds an action level for lead or copper. ~~Initial monitoring for water quality parameters~~ Water quality parameter monitoring includes both tap water monitoring and source water monitoring.

B. ~~Each large, medium, or small water system that is required to conduct monitoring for water quality parameters shall collect samples for the following water quality parameters~~ A system that monitors for water quality parameters shall collect samples for the following parameters:

1. pH (at the time of sample collection),
2. Alkalinity,
3. Calcium,
4. Conductivity,
5. Water temperature (at the time of sample collection),
6. Orthophosphate (when a phosphate-based corrosion inhibitor is used), and
7. Silica (when a silicate-based corrosion inhibitor is used).

C. ~~Tap water samples for water quality parameters shall be~~ The water supplier shall take tap water samples that are representative of water quality throughout the distribution system, taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. ~~Tap water samples for water quality parameters need not be taken from the same locations as tap water samples for lead and copper. Tap water samples for water quality parameters may be taken at the same sampling sites used for total coliform sampling~~ The water supplier may take tap water samples for water quality parameters at the same locations as tap water samples for lead and copper or at the same sampling sites used for total coliform sampling. ~~Source water samples for water quality parameters shall be taken~~ The water supplier shall take source water samples for water quality parameters at sampling points as prescribed in R18-4-218.

D. ~~Each large, medium, and small water system~~ public water system that monitors for water quality parameters shall collect ~~two~~ 2 tap water samples for water quality parameters during each ~~six-month~~ 6-month monitoring period from the following number of taps:

System Size (number of people served)

Number of Sites

> 100,000	25
10,001-100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
# 100	1

E. ~~Each large, medium, and small water system~~ public water system that monitors for water quality parameters shall collect ~~two~~ 2 source water samples ~~for water quality parameters~~ at each sampling point as prescribed in R18-4-218 during each monitoring period.

F. Each large water system ~~is required to conduct initial monitoring~~ shall monitor for water quality parameters at taps and at each sampling point ~~during each of two~~ for 2 consecutive ~~six-month~~ 6-month monitoring periods. A small or medium-size water system shall ~~conduct monitoring~~ monitor for water quality parameters only if the system exceeds an action level for lead or copper. A small or medium water system shall complete tap water and source water monitoring for water quality parameters in the same monitoring period ~~during which~~ that the system exceeds an action level for lead or copper.

G. ~~Based upon the results of tap water monitoring for lead and copper and monitoring for water quality parameters, a~~ A small or medium water system ~~which~~ that exceeds an action level for lead or copper shall recommend installation of one or more of the corrosion control treatments listed in this subsection ~~which~~ that the small or medium water system believes constitutes optimal corrosion control. Each small or medium water system shall make a recommendation on an optimal corrosion control treatment to the Department within ~~six~~ 6 months ~~of completion of the six-month~~ after the monitoring period ~~during which~~ that the action level was exceeded. The Department may require that a small or medium water system conduct additional monitoring for water quality parameters to assist ~~the Department in reviewing the system~~ the Department's review of the system's recommendation on optimal corrosion control treatment.

Optimal corrosion control treatments include:

1. Alkalinity and pH adjustment,
2. Calcium hardness adjustment, and

3. The addition of a phosphate or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.
- H. ~~Based upon available information, including a small or medium water system's recommendation on optimal corrosion control treatment, the~~ The Department shall, in writing, either approve the optimal corrosion control treatment recommended by the system, designate a different optimal corrosion control treatment for the system, or require that the small or medium water system conduct a corrosion control study to identify the optimal corrosion control treatment for the system. If the Department makes the determination that a corrosion control study is not necessary, ~~then~~ the Department shall designate the optimal corrosion control treatment for the system within the following time frames:
1. For medium water systems, within 18 months after the system exceeds the lead or copper action level, or
  2. For small water systems, within 24 months after the system exceeds the lead or copper action level.
- I. ~~The Department and the system shall consider the results of any additional~~ monitoring for water quality parameters conducted by a system in addition to the minimum requirements prescribed in this Section ~~shall be considered by the system and the Department in making recommendations~~ a recommendation regarding optimal corrosion control treatment, performance of a corrosion control study, designation of optimal corrosion control treatment or water quality parameters for optimal corrosion control, or modification of an optimal corrosion control treatment decision.

**R18-4-314. Lead and Copper; Source Water Monitoring and Treatment**

- A. ~~A large, medium, or small~~ public water system ~~which that~~ exceeds an action level for lead or copper shall conduct source water monitoring for lead or copper.
- B. Source water monitoring for lead or copper shall be conducted at sampling points as prescribed in R18-4-218. ~~A public water system may reduce the total number of samples which must be analyzed by compositing as prescribed by~~ composite samples in accordance with R18-4-219.
- C. ~~A large, medium, or small water system which~~ public water system that exceeds an action level for lead or

copper shall collect ~~one~~ 1 sample from each sampling point within ~~six 6~~ months of completion of the ~~six-month~~ month after the monitoring period in which there was an exceedance of that the action level for lead or copper was exceeded.

- D. Within six 6 months after the ~~six-month~~ monitoring period in which a large, medium, or small water system ~~exceeds that~~ an action level for lead or copper was exceeded, the ~~system water supplier~~ shall make a written recommendation to the Department as to whether one of the source water treatments listed in ~~this~~ subsection (G) is necessary. The ~~system water supplier~~ may recommend that no source water treatment be installed ~~based upon a demonstration if the water supplier demonstrates~~ that source water treatment is not necessary to minimize lead or copper levels at taps.
- E. The Department shall ~~complete an evaluation of~~ evaluate the results of all source water samples submitted by a ~~large, medium, or small~~ public water system to determine ~~whether if~~ source water treatment is necessary to minimize lead or copper levels in water delivered to taps. The Department shall make a written determination ~~on whether~~ regarding the necessity of source water treatment is ~~necessary~~ within six 6 months after submission of source water monitoring results.
- F. ~~Where~~ If the Department determines that a ~~large, medium, or small~~ public water system is not required to install source water treatment, the system shall conduct source water monitoring at one of the following frequencies:
1. A ~~large, medium, or small~~ water system that is a groundwater system shall collect source water samples for lead or copper once during each compliance period, beginning in the compliance period that the Department determines that source water treatment is unnecessary.
  2. A ~~large, medium, or small~~ water system that is a surface water system shall collect source water samples for lead or copper annually. The first annual monitoring period shall begin on the date that the Department determines that source water treatment is unnecessary.
- G. If the Department requires installation of source water treatment, a ~~large, medium, or small~~ public water system shall install ~~the~~ treatment within 24 months of the date that the Department makes a determination that source water treatment is necessary. ~~Each~~ A public water system shall properly install and operate the source water treatment that is approved or designated by the Department. The Department shall either

require installation and operation of the source water treatment recommended by the system water supplier or require the installation and operation of another source water treatment from among the following:

1. Ion exchange,
2. Reverse osmosis,
3. Lime softening, or
4. Coagulation ~~+~~ and filtration.

- H. The Department may request additional information from a ~~large, medium, or small~~ public water system to aid in its source water treatment determination. ~~If the Department requests additional information is requested, then~~ a water system supplier shall provide the information by the date specified by the Department in its request. The Department shall notify a ~~large, medium, or small~~ public water system, in writing, of its source water treatment determination and set forth the basis for its decision.
- I. A ~~large, medium, or small~~ public water system that ~~is required to install~~ installs source water treatment shall complete follow-up tap water and source water monitoring for lead and copper ~~and follow-up source water monitoring for lead and copper~~ within 36 months of the date that the Department determines that source water treatment is necessary.
- J. The Department shall review a ~~large, medium, or small~~ public water system's installation and operation of source water treatment and designate maximum permissible levels for lead or copper within ~~six~~ 6 months after the completion of follow-up monitoring. The Department shall review the source water samples taken by the system both before and after the system installs source water treatment to determine ~~whether~~ if the system has properly installed and operated the source water treatment designated by the Department. Based upon its review, the Department shall designate the maximum permissible levels for lead or copper ~~Such levels shall that~~ reflect the contaminant removal capability of the source water treatment when it is properly operated and maintained. The Department shall provide written notice to the system and explain the basis for its decision.
- K. A ~~large, medium, or small~~ public water system shall ~~operate in compliance~~ comply with the Department-designated maximum permissible levels for lead or copper and ~~shall~~ continue source water monitoring. A system shall monitor at the frequency specified below ~~in cases where~~ if the Department

designates maximum permissible levels:

1. A groundwater system shall collect ~~one~~ 1 sample from each sampling point once during each compliance period, beginning in the compliance period that the Department designates maximum permissible levels for lead or copper.
  2. A surface water system shall collect ~~one~~ 1 sample annually from each sampling point. The first monitoring period shall begin on the date that the Department specifies maximum permissible levels for lead or copper.
- L. ~~Each large, medium, or small~~ A public water system shall maintain lead or copper levels below the maximum permissible levels designated by the Department at each sampling point. A system is out of compliance ~~with this subsection~~ if the level of lead or copper at any sampling point is greater than the maximum permissible level designated by the Department.
- M. A ~~large, medium, or small~~ public water system is not required to conduct additional source water monitoring for lead or copper if the system does not exceed the action level for lead or copper during the entire source water sampling period applicable to the system under subsections (F)(1) or (F)(2) ~~of this Section~~.
- N. ~~A large, medium, or small water system shall report the sampling results for all source water samples within the first ten days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle).~~
- O. ~~If a sampling site is changed in a subsequent monitoring period, a large, medium, or small water system shall report the new sampling point to the Department and include an explanation of why the sampling point has changed.~~
- P N. ~~Upon its own initiative or in response to a written request by a large, medium, or small water system or other interested party, the~~ The Department may modify its source water treatment determination or designation of maximum permissible lead and copper concentrations for water entering the distribution system on its own initiative or in response to a written request by a public water system or other interested party. A request for modification by a ~~large, medium, or small~~ public water system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation.

The Department may modify its determination ~~where~~ if it concludes that ~~such a~~ change is necessary to ensure that ~~the system continues to minimize~~ lead and copper concentrations in source water are minimized. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the Department's decision, and provide an implementation schedule for completing the source water treatment modifications.

~~Q. Q.~~ ~~Where the results of sampling indicate an exceedance of~~ If a sample exceeds a maximum permissible levels ~~level~~ for lead or copper, the Department may require that ~~one~~ the water supplier take 1 confirmation sample ~~be collected at the same sampling point,~~ as soon as possible but no later than 2 weeks after the initial sample was taken ~~but not to exceed 2 weeks, at the same sampling point.~~ If a Department-required confirmation sample is taken for lead or copper, ~~then~~ the results of the initial and confirmation sample shall be averaged ~~in determining to determine~~ to determine compliance with the ~~Department-specified~~ maximum permissible ~~levels level~~ level.

~~R. P.~~ The Department may reduce source water monitoring after designation of maximum permissible levels as follows:

1. A groundwater system ~~which that~~ demonstrates that water entering the distribution system has been maintained below the maximum permissible level for lead or copper designated by the Department for ~~three~~ 3 consecutive compliance periods may reduce the monitoring frequency for lead or copper to once during each subsequent compliance cycle.
2. A surface water system ~~which that~~ demonstrates that water entering the distribution system has been maintained below the maximum permissible level for lead or copper designated by the Department for ~~three~~ 3 consecutive years may reduce the monitoring frequency to once during each subsequent compliance cycle.
3. A water system that uses a new source is not eligible for reduced monitoring for lead or copper until concentrations in samples collected from the new source during ~~three~~ 3 consecutive monitoring periods are below the maximum permissible levels for lead or copper ~~specified~~ designated by the Department.

**R18-4-316. Public Education Requirements for Lead**

A. A ~~community water system [CWS]~~ CWS that exceeds the action level for lead ~~based on the analytical results of tap water monitoring~~ shall, within 60 days of the end of the monitoring period do all of the following:

1. Insert a notice on each customer's water utility bill ~~which that~~ states in large print: "Some homes in this community have elevated lead levels in their drinking water. Lead can pose a significant risk to your health. Please read the enclosed notice for further information."
2. Include with each customer's water utility bill a notice ~~which that~~ includes the text contained in Appendix ~~E~~ B of this Chapter.
3. Provide the text contained in Appendix ~~E~~ B of this Chapter to the editorial departments of the major daily and weekly newspapers circulated throughout the community.
4. Deliver pamphlets or brochures that contain the public education materials related to the health effects of lead and the steps that can be taken in the home to reduce lead exposure that are prescribed in Appendix ~~E~~ B of this Chapter to facilities and organizations, including the following:
  - a. Public schools ~~and/or~~ or local school boards,
  - b. City or county health department or environmental quality departments,
  - c. Women, Infants, and Children [WIC] and Head Start programs ~~whenever~~ if available,
  - d. Public and private hospitals and clinics,
  - e. Pediatricians,
  - f. Family planning clinics, and
  - g. Local welfare agencies.
5. Submit a public service announcement to at least ~~five of the~~ 5 radio and television stations with the largest audiences that broadcast to the community served by the community water system.

The public service announcement shall contain the following language:

"Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That's why I urge you to do what I did. I had my water tested for

[insert free or \$ per sample]. You can contact the [insert the name of the city or water system] for information on testing and on simple ways to reduce your exposure to lead in drinking water. To have your water tested for lead, or to get more information about this public health concern, please call [insert the phone number of the city or water system]."

- B. A CWS shall repeat the tasks contained in subsections (A) (1) through (4) every 12 months and the public service announcement prescribed in subsection (A)(5) every ~~six~~ 6 months for as long as the system exceeds the lead action level.
- C. A ~~nontransient, noncommunity water system~~ [NTNCWS] NTNCWS that exceeds the lead action level ~~based on the analytical results of tap water samples~~ shall, within 60 days, deliver the public education materials ~~contained~~ containing the language in the "Introduction," "Health Effects of Lead", and "Steps You Can Take in the Home to Reduce Lead Exposure" paragraphs prescribed in Appendix ~~€~~ B of this Chapter as follows:
1. Post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system, and
  2. Distribute informational pamphlets or brochures on lead in drinking water to each person served by the ~~nontransient, noncommunity water system~~ NTNCWS.
- D. A NTNCWS shall repeat the public education tasks contained in subsection (C) ~~above~~ at least once during each calendar year for as long as the system exceeds the lead action level.
- E. A CWS or NTNCWS shall include the lead public education text prescribed in Appendix ~~€~~ B in all of the printed materials it distributes through its lead public education program. Any additional information presented by a public water system shall be consistent with the information contained in Appendix ~~€~~ B and be written in plain language that can be understood by persons served by the system. Where appropriate, public education materials shall be multilingual.
- F. A CWS or NTNCWS may discontinue delivery of public education materials if the public water system has met the lead action level during the most recent ~~six-month~~ 6-month monitoring period ~~conducted~~. A CWS or NTNCWS shall recommence public education in accordance with this Section if it subsequently exceeds the lead action level.

- G. By December 31st of each year, ~~any~~ a CWS or NTNCWS that is subject to the public education requirements in this Section shall submit a letter to the Department demonstrating that the system has delivered the public education materials that meet the content and delivery requirements ~~and the delivery requirements~~ prescribed in this Section. The letter shall include a list of all the newspapers, radio stations, television stations, facilities, and organizations ~~to which the system~~ that the CWS or NTNCWS delivered public education materials during the previous year. A CWS or NTNCWS shall submit the letter required by this paragraph annually for as long as the public water system exceeds the lead action level.

**R18-4-402. Special Monitoring for Sodium**

- A. ~~Each community water system [CWS]~~ A CWS shall conduct monitoring for sodium.
- B. Each CWS shall collect ~~one~~ 1 sample per water treatment plant. ~~The minimum number of samples required to be taken by the CWS shall be based on the number of water treatment plants used by the CWS, except that~~ multiple Multiple wells drawing raw water from a single aquifer may, with Department approval, be considered one treatment plant for purposes of determining the minimum number of sodium samples required. ~~The Department may require a water supplier to collect and analyze water samples more frequently in locations where the sodium content is variable.~~
- C. Each CWS shall collect and analyze ~~one~~ 1 sample annually for each water treatment plant utilizing a surface water ~~sources~~ source, in whole or in part. A CWS shall collect and analyze ~~one~~ 1 sample every ~~three~~ 3 years for each water treatment plant utilizing only groundwater sources. The Department may require a water supplier to collect and analyze water samples more frequently in locations where the sodium content is variable.

**~~R18-4-403. Special Monitoring for Water Corrosivity Characteristics~~**

- A. ~~Each community water system [CWS] shall conduct a one-time round of monitoring to determine water corrosivity characteristics.~~
- B. ~~A CWS shall conduct monitoring to determine water corrosivity characteristics at a point-of-entry to the distribution system from each water treatment plant.~~
- C. ~~A CWS shall collect two samples for each water treatment plant utilizing a surface water source, in whole~~

~~or in part. One sample shall be collected in mid-summer and one in mid-winter. A CWS shall collect one sample for each water treatment plant utilizing a groundwater source. The minimum number of samples to be taken for water corrosivity characteristics shall be based upon the number of water treatment plants used by the CWS, except that multiple wells drawing water from a single aquifer may, with Department approval, be considered one water treatment plant for the purpose of determining the minimum number of samples required.~~

~~D. The determination of water corrosivity characteristics shall include measurement of the pH, calcium hardness, alkalinity, temperature, total dissolved solids (total filterable residue) and calculation of the Langelier Index. The Department may require more frequent monitoring or monitoring for additional parameters which may indicate water corrosivity characteristics, such as sulfates and chlorides.~~

~~F. A CWS shall identify and report to the Department whether the following construction materials are present in their distribution system:~~

- ~~1. Lead from piping, solder, caulking, interior lining of distribution mains, alloys, and home plumbing.~~
- ~~2. Copper from piping and alloys, service lines, and home plumbing.~~
- ~~3. Galvanized piping, service lines, and home plumbing.~~
- ~~4. Ferrous piping materials, such as cast iron and steel.~~
- ~~5. Asbestos cement pipe.~~
- ~~6. Vinyl lined asbestos cement pipe.~~
- ~~7. Coal tar lined pipes and tanks.~~

**R18-4-403. Special Monitoring for Nickel**

- A. Each CWS and NTNCWS shall monitor for nickel.
- B. Each CWS and NTNCWS shall monitor for nickel at each sampling point as prescribed in R18-4-218.
- C. A CWS or NTNCWS may composite samples for nickel as prescribed in R18-4-219.
- D. Each CWS and NTNCWS shall monitor for nickel at the following frequencies:
  1. Each CWS and NTNCWS shall take 1 sample at each groundwater sampling point once every

3 years.

2. Each CWS and NTNCWS shall take 1 sample at each surface water sampling point annually.

E. A water supplier may request a reduction in the monitoring frequency for nickel as follows:

1. Groundwater sampling points: The Department may reduce monitoring frequency from once every 3 years to a less frequent basis if the CWS or NTNCWS has monitored for nickel at least once every 3 years for 9 years at the groundwater sampling point and all analytical results were below 0.1 mg/L.

2. Surface water sampling points: The Department may reduce monitoring frequency from annually to a less frequent basis if a CWS or NTNCWS has monitored annually at the surface water sampling point for at least 3 consecutive years and all analytical results for nickel were below 0.1 mg/L.

3. The Department may reduce monitoring frequency for nickel for a term not to exceed 9 years.

4. A CWS or NTNCWS shall take at least 1 sample for nickel during the reduced monitoring term.

5. In determining the appropriate reduced monitoring frequency at a sampling point, the Department shall consider the following factors:

a. Reported concentrations of nickel from all previous monitoring;

b. The degree of variation in the reported concentrations of nickel; and

c. Other factors that may affect the concentration of nickel such as changes in groundwater pumping rates, changes in the configuration of the CWS or NTNCWS, or changes in operating procedures, stream flows, or source water characteristics.

6. A decision by the Department to reduce monitoring frequency for nickel at a sampling point shall be in writing and shall set forth the grounds for the decision. A water supplier may make a written request for reduced monitoring or the Department may reduce monitoring on its own. A water supplier shall provide documentation of analytical results that supports a request for reduced monitoring. If a CWS or NTNCWS submits new data or other data relevant to the public water system's appropriate monitoring frequency become available, the Department shall review the data and, if appropriate, revise its determination of monitoring frequency.

7. A CWS or NTNCWS that uses a new source is not eligible for reduced monitoring until 3 consecutive rounds of monitoring from the new source have been completed.

**R18-4-504. Prohibition on the Use of Lead Pipe, Solder, and Flux**

Construction materials used in ~~the~~ a public water system, including residential and non-residential facilities connected to the public water system, shall be lead-free as defined at ~~R18-4-101(43)~~ R18-4-101(46). This ~~subsection~~ Section shall not apply to leaded joints necessary for the repair of cast iron pipes.

**Appendix A. Mandatory Health Effects Language**

*(1)-(49) No change*

~~(50) **Nickel.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nickel poses a health concern at certain levels of exposure. This inorganic metal occurs naturally in soils, ground water and surface waters and is often used in electroplating, stainless steel and alloy products. It generally gets into water from mining and refining operations. This chemical has been shown to damage the heart and liver in laboratory animals when the animals are exposed to high levels over their lifetimes. EPA has set the drinking water standard at 0.1 parts per million (ppm) for nickel to protect against the risk of these adverse effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to nickel.~~

*Renumber (51) to (50).*

~~(52)~~ (51) **Nitrite.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nitrite poses and acute health concern at certain levels of exposure. This inorganic chemical is used in fertilizers and is found in sewage and wastes from humans and/or farm animals and generally gets into drinking water as a result of those activities. While excessive levels of nitrite in drinking water have not been observed, other sources of nitrite have caused serious illness and sometimes death in infants under six months of age. The serious illness in infants is caused because nitrite interferes with the oxygen carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly. However, in most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical

advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source ~~for information concerning alternate sources~~ of drinking water ~~for infants~~. EPA has set the drinking water standard at 1 part per million (ppm) for nitrite to protect against the risk of these adverse effects. EPA has also set a drinking water standard for nitrate (converted to nitrite in humans) at 10 ppm and for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to nitrite.

*Renumber (53) - (72) to (52) - (71).*

**APPENDIX B**

**Detection Limits**

Detection shall be defined as greater than or equal to the following concentrations for each contaminant.

**A. Inorganic Contaminants**

<b>Contaminant</b>	<b>Methodology</b>	<b>Detection Limit (mg/l)</b>
Antimony	Atomic Absorption; Furnace	0.003
	Atomic Absorption; platform furnace	0.0008 <sup>6</sup>
	ICP-Mass Spectrometry	0.0004
	Hydride Atomic Absorption	0.001
Asbestos	Transmission Electron Microscopy	0.01 MFL <sup>2</sup>
Barium	Atomic Absorption; furnace	0.002
	Atomic Absorption; direct aspiration	0.1
	Inductively Coupled Plasma	0.002 (0.001) <sup>†</sup>
Beryllium	Atomic Absorption; furnace	0.0002
	Atomic Absorption; platform furnace	0.00002 <sup>6</sup>
	Inductively Coupled Plasma <sup>3</sup>	0.0003
	ICP-Mass Spectrometry	0.0003
Cadmium	Atomic Absorption; furnace	0.0001
	Inductively Coupled Plasma	0.001 <sup>†</sup>

Chromium	Atomic Absorption; furnace	0.001
	Inductively Coupled Plasma	0.007 (0.001) <sup>†</sup>
Copper	Atomic Absorption; furnace	0.001
	Atomic Absorption; direct aspiration	0.020
	Atomic Absorption; platform furnace	0.001
	Inductively coupled plasma	0.001
	Inductively coupled plasma; mass spectrometry	0.001
Cyanide	Distillation, spectrophotometric <sup>‡</sup>	0.02
	Distillation, automated, spectrophotometric <sup>‡</sup>	0.005
	Distillation, selective electrode <sup>‡</sup>	0.05
	Distillation, amenable, spectrophotometric <sup>§</sup>	0.02
Lead	Atomic absorption; furnace	0.001
	Atomic absorption; platform furnace	0.001
	Inductively coupled plasma	0.001
	Inductively coupled plasma; mass spectrometry	0.001
Mercury	Manual Cold Vapor Technique	0.0002
	Automated Cold Vapor Technique	0.0002
Nickel	Atomic Absorption; furnace	0.001
	Atomic Absorption; platform furnace	0.0006 <sup>†</sup>
	Inductively Coupled Plasma <sup>§</sup>	0.005
	ICP-Mass Spectrometry	0.0005

Nitrate	Manual Cadmium Reduction	0.01
	Automated Hydrazine Reduction	0.01
	Automated Cadmium Reduction	0.05
	Ion Selective Electrode	1
	Ion Chromatography	0.01
Nitrite	Spectrophotometric	0.01
	Automated Cadmium Reduction	0.05
	Manual Cadmium Reduction	0.01
	Ion Chromatography	0.004
Selenium	Atomic Absorption; furnace	0.002
	Atomic Absorption; gaseous hydride	0.002
Thallium	Atomic Absorption; furnace	0.001
	Atomic Absorption; platform furnace	0.0007 <sup>5</sup>
	ICP-Mass Spectrometry	0.0003

Footnotes:

<sup>1</sup> Using concentration technique in Appendix A to EPA Method 200.7.

<sup>2</sup> MFL = million fibers per liter > 10 µm.

<sup>3</sup> Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.

<sup>4</sup> Screening method for total cyanides.

<sup>5</sup> Measures "free" cyanides.

<sup>6</sup> Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

## B. Volatile Organic Chemicals

The detection limit for all volatile organic chemicals is 0.0005 mg/l.

## C. Synthetic Organic Chemicals

<u>Contaminant</u>	<u>Detection Limit (mg/l)</u>
Alachlor	.0002
Atrazine	.0001
Benzo (a) pyrene	.00002
Carbofuran	.0009
Chlorodane	.0002
2,4-D	.0001
Dalapon	.001
Dibromochloropropane (DBCP)	.00002
Di(2ethylhexyl)adipate	.0006
Di(2-ethylhexyl)phthalate	.0006
Dinoseb	.0002
Dioxin	.000000005 (5 x 10 <sup>-9</sup> )
Diquat	.0004
Endothall	.009
Endrin	.00001
Ethylene Dibromide	.00001
Glyphosphate	.006
Heptachlor	.00004
Heptachlor epoxide	.00002
Hexachlorobenzene	.0001
Hexachlorocyclopentadiene	.0001
Lindane	.00002

Methoxychlor	.0001
Oxamyl (vydate)	.002
Pentachlorophenol	.00004
Picloram	.0001
PCB--as Aroclor (screening)	
PCBs (as decachlorobiphenyl)	.0001
Simazine	.00007
Toxaphene	.001
2,4,5-TP (Silvex)	.0002

<sup>+</sup>PCBs may be screened using the Aroclor methods listed below:

<u>Aroclor</u>	<u>Detection limit (mg/L)</u>
1016	0.00008
1221	0.02
1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

## **Appendix C B. Lead Public Education**

*Renumber only. No change to content of Appendix.*