

# 61-58.9

## Variances and Exemptions

Regulation History as Published in State Register			
Date	Document Number	Volume	Issue
November 25, 1988	1040	12	11
December 28, 1990	1301	14	13
August 27, 1993	1464	17	8
December 24, 1993	1683	17	12
November 25, 1994	1796	18	11
July 28, 1995	1830	19	7
September 28, 2001	2641	25	9
December 27, 2002	2782	26	12
January 23, 2004 (Errata)	2641, 2782, 2842	28	1
September 26, 2014	4469	38	9

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## **A. Applicability.**

The Department may issue variances and exemptions from the requirements of these primary drinking water regulations under conditions and in a manner which are not less stringent than the conditions under which, and the manner in which, variances and exemptions may be granted under the Federal Safe Drinking Water Act. This regulation shall apply to each public water system, unless the public water system meets all of the following conditions:

- (1) Consists only of distribution and storage facilities (and does not have any collection and treatment facilities);
- (2) Obtains all of its water from, but is not owned or operated by, a public water system to which such regulations apply;
- (3) Does not sell water to any person; and
- (4) Is not a carrier which conveys passengers in interstate commerce.

## **B. Variances.**

- (1) Requirements for a variance.

(a) The Department may grant one or more variances to any public water system within the State from any requirement respecting a maximum contaminant level of an applicable State primary drinking water regulation upon a finding that:

(i) Because of characteristics of the raw water sources which are reasonably available to the system, the system cannot meet the requirements respecting the maximum contaminant levels of such drinking water regulations despite application of the best technology, treatment techniques, or other means, which the Department finds are generally available (taking costs into consideration); and,

(ii) The granting of a variance will not result in an unreasonable risk to the health of persons served by the system.

(b) The Department may grant one or more variances to any public water system within the State from any requirement of a specific treatment technique or an applicable State primary drinking water regulation upon a finding that the public water system applying for the variance has demonstrated that such treatment technique is not necessary to protect the health of persons because of the nature of the raw water source of such system.

- (2) Requests for a variance.

A supplier of water may request the granting of a variance by submitting a request for a variance in writing to the Department. Suppliers of water may submit a joint request for variances when they seek similar variances under similar circumstances. Any written request for a variance or variances shall include the following information:

- (a) The nature and duration of the variance requested.

(b) Relevant analytical results of water quality sampling of the system, including results of relevant tests conducted pursuant to the requirements of these regulations.

(c) For any request made under paragraph (1)(a) above:

(i) Explanation in full and evidence of the best available treatment technology and techniques.

(ii) Economic and legal factors relevant to ability to comply.

(iii) Analytical results of raw water quality relevant to the variance request.

(iv) A proposed compliance schedule, including the date each step toward compliance will be achieved. Such schedule shall include as a minimum the following dates:

(A) Date by which arrangement for alternative raw water source or improvement of existing raw water source will be completed.

(B) Date of initiation of the connection of the alternative raw water source or improvement of existing raw water source.

(C) Date by which final compliance is to be achieved.

(v) A plan for the provision of safe drinking water in the case of an excessive rise in the contaminant level for which the variance is requested.

(vi) A plan for additional interim control measures during the effective period of variance.

(d) For any request made under paragraph (1)(b) above, a statement that the system will perform monitoring and other reasonable requirements prescribed by the Department as a condition to the variance.

(e) Other information, if any, believed to be pertinent by the applicant.

(f) Such other information as the Department may require.

(3) Consideration of a variance request.

(a) The Department will act on any variance request submitted pursuant to paragraph (2) above within 90 days of receipt of the request.

(b) In its consideration of whether the public water system is unable to comply with a contaminant level required by these regulations because of the nature of the raw water source, the Department will consider such factors as the following:

(i) The availability and effectiveness of treatment methods for the contaminant for which the variance is requested.

(ii) Cost and other economic considerations such as implementing treatment, improving the quality of the source water or using an alternate source.

(c) A variance may be issued to a system only after the system's application of the best technology, treatment techniques, or other means, which the Department finds are available (taking costs into consideration).

(d) In its consideration of whether a public water system should be granted a variance to a required treatment technique because such treatment is unnecessary to protect the public health, the Department will consider such factors as the following:

- (i) Quality of the water source including water quality data and pertinent sources of pollution.
- (ii) Source protection measures employed by the public water system.

(4) Disposition of a variance request.

(a) If the Department decides to deny the application for a variance, it will notify the applicant of its intention to issue a denial. Such notice will include a statement of reasons for the proposed denial, and will offer the applicant an opportunity to present, within 30 days of receipt of the notice, additional information or argument to the Department. The Department will make a final determination on the request within 30 days after receiving any such additional information or argument. If no additional information or argument is submitted by the applicant, the application will be denied.

(b) If the Department proposes to grant a variance request submitted pursuant to paragraph (2) above, it shall notify the applicant of its decision in writing. Such notice will identify the variance, the facility covered, and will specify the period of time for which the variance will be effective.

(i) For the type of variance specified in paragraph (1)(a) above, such notice will provide that the variance will be terminated when the system comes into compliance with the applicable regulation, and may be terminated upon a finding by the Department that the system has failed to comply with any requirements of a final schedule issued pursuant to paragraph (5) below.

(ii) For the type of variance specified in paragraph (1)(b) above, such notice will provide that the variance may be terminated at any time upon a finding that the nature of the raw water source is such that the specified treatment technique for which the variance was granted is necessary to protect the health of persons, or upon a finding that the public water system has failed to comply with monitoring and other requirements prescribed by the Department as a condition to the granting of the variance.

(c) For a variance specified in paragraph (1)(a)(i) above, the Department will propose a schedule for:

(i) Compliance (including increments of progress) by the public water system with each contaminant level requirement covered by the variance; and,

(ii) Implementation by the public water system of such additional control measures as the Department may require for each contaminant covered by the variance.

(d) The proposed schedule for compliance will specify dates by which steps toward compliance are to be taken, including at the minimum, where applicable:

(i) The date by which arrangement for an alternative raw water source or improvement of existing raw water source will be completed.

(ii) The date of initiation of the connection for the alternative raw water source or improvement of the existing raw water source.

(iii) The date by which final compliance is to be achieved.

(e) The proposed schedule may, if the public water system has no access to an alternative raw water source and can effect or anticipate no adequate improvement of the existing raw water source, specify an indefinite time period for compliance until a new and effective treatment technology is developed at which time a new compliance schedule will be prescribed by the Department.

(f) The proposed schedule for implementation of additional interim control measures during the period of variance will specify interim treatment techniques, methods and equipment, and dates by which steps toward meeting the additional interim control measures are to be met.

(g) The schedule will be prescribed by the Department at the time of the granting of the variance, subsequent to provision of opportunity for hearing pursuant to paragraph (5) below.

(5) Public notice and opportunity for hearing.

(a) Before a variance and schedule proposed by the Department pursuant to paragraph (4) above may take effect, the Department will provide notice and opportunity for public hearing on the variance and schedule. A notice given pursuant to the preceding section may cover the granting of more than one variance and a hearing held pursuant to such notice will include each of the variances covered by the notice.

(b) Public notice of an opportunity for hearing on a variance and schedule will be circulated in a manner designed to inform interested and potentially interested persons of the proposed variance and schedule, and will include at least the following:

(i) Posting of a notice in the principal post office of each municipality or area served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the area served by the public water system; and,

(ii) Such notice will include a summary of the proposed variance and schedule and shall inform interested persons that they may request a public hearing on the proposed variance and schedule.

(c) Requests for hearing may be submitted by any interested person. Frivolous or insubstantial requests for hearing may be denied by the Department. Requests must be submitted to the Department within 30 days after issuance of the public notice provided for in paragraph (b) of this section. Such requests shall include the following information:

(i) The name, address and telephone number of the individual, organization or other entity requesting a hearing.

(ii) A brief statement of the interest of the person making the request in the proposed variance and schedule, and of information that the requester intends to submit at such hearing.

(iii) The signature of the individual making the request, or, if the request is made on behalf of an organization or other entity, the signature of a responsible official of the organization or other entity.

(d) The Department will give notice of any hearing to be held pursuant to a request submitted by an interested person or on its own motion. Notice will be given and such hearing conducted in accordance with the Department's administrative procedures.

(e) The variance and schedule will become effective 30 days after notice of opportunity for hearing is given pursuant to paragraph (b) of this section if no timely request for a hearing is submitted and the Department does not determine to hold a public hearing on its own motion.

(6) Action after hearing.

If a public hearing is held pursuant to paragraph (5) above, the Department will take into consideration information obtained during such hearing and confirm, revise or rescind the proposed variance and schedule.

(7) Variance for alternative treatment techniques.

The Department may grant a variance from any treatment technique requirement of a state primary drinking water regulation to a supplier of water upon a showing from the supplier that an alternative treatment technique not included in such requirement is at least as efficient in lowering the level of the contaminant with respect to which such requirement was prescribed. A variance under this paragraph shall be conditioned on the use of the alternative treatment technique which is the basis of the variance.

**C. Exemptions.**

(1) The Department may exempt any public water system within the State from any requirement respecting a maximum contaminant level or any treatment technique requirement, or from both, of an applicable state primary drinking water regulation upon a finding that:

(a) Due to compelling factors (which may include economic factors), the public water system is unable to comply with such contaminant level or treatment technique requirement;

(b) The public water system was in operation on the effective date of such contaminant level or treatment technique requirement; and,

(c) The granting of the exemption will not result in an unreasonable risk to health.

(2) Requests for an exemption.

A supplier of water may request the granting of an exemption by submitting a request for exemption in writing to the Department. Suppliers of water may submit a joint request for exemptions when they seek similar exemptions under similar circumstances. Any written request for an exemption shall include the following information:

(a) The nature and duration of exemption requested.

(b) Relevant analytical results of water quality sampling of the system, including results of relevant tests conducted pursuant to the requirements of these regulations.

(c) Explanation of the compelling factors such as time or economic factors which prevent such system from achieving compliance.

(d) Other information, if any, believed by the applicant to be pertinent to the application.

(e) A proposed compliance schedule, including the date when each step toward compliance will be achieved.

(f) Such other information as the Department may require.

(3) Consideration of an exemption request.

(a) The Department will act on any exemption request submitted pursuant to paragraph (2) above within 90 days of receipt of the request.

(b) In its consideration of whether the public water system is unable to comply due to compelling factors, the Department will consider such factors as the following:

(i) Construction, installation, or modification of the treatment equipment or systems.

(ii) The time needed to put into operation a new treatment facility to replace an existing system which is not in compliance.

(iii) Economic feasibility of compliance.

(4) Disposition of an exemption request.

(a) If the Department decides to deny the application for an exemption, it will notify the applicant of its intention to issue a denial. Such notice will include a statement of reasons for the proposed denial, and will offer the applicant an opportunity to present, within 30 days of receipt of the notice, additional information or argument to the Department. The Department will make a final determination on the request within 30 days after receiving any such additional information or argument. If no additional information or argument is submitted by the applicant, the application will be denied.

(b) If the Department proposes to grant an exemption request submitted pursuant to paragraph (2) above, it will notify the applicant of its decision in writing. Such notice will identify the facility covered, and will specify the termination date of the exemption. Such notice will provide that the exemption will be terminated when the system comes into compliance with the applicable regulation, and may be terminated upon a finding by the Department that the system has failed to comply with any requirements of a final schedule issued pursuant to paragraph (6) below.

(c) The Department will propose a schedule for:

(i) Compliance (including increments of progress) by the public water system with each contaminant level requirement and treatment technique requirement covered by the exemption; and,

(ii) Implementation by the public water system of such control measures as the Department may require for each contaminant covered by the exemption.

(d) The schedule will be prescribed by the Department at the time the exemption is granted, subsequent to provision of opportunity for hearing pursuant to paragraph (5) below.

(5) Public notice and opportunity for hearing.

(a) Before a schedule proposed by the Department pursuant to paragraph (4) above may take effect, the Department will provide notice and opportunity for public hearing on the schedule. A notice given pursuant to the preceding sentence may cover the proposal of more than one such schedule and a hearing held pursuant to such notice shall include each of the schedules covered by the notice.

(b) Public notice of an opportunity for hearing on an exemption schedule will be circulated in a manner designed to inform interested and potentially interested persons of the proposed schedule, and will include at least the following:

(i) Posting of a notice in the principal post office of each municipality or area served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the area served by the public water system.

(ii) Such notice will include a summary of the proposed schedule and shall inform interested persons that they may request a public hearing on the proposed schedule.

(c) Requests for hearing may be submitted by any interested person. Frivolous or insubstantial requests for hearing may be denied by the Department. Requests must be submitted to the Department within 30 days after issuance of the public notices provided for in paragraph (b) of this section. Such request shall include the following information:

(i) The name, address and telephone number of the individual, organization or other entity requesting a hearing.

(ii) A brief statement of the interest of the person making the request in the proposed schedule and of information that the requesting person intends to submit at such hearing.

(iii) The signature of the individual making the request, or, if the request is made on behalf of an organization or other entity, the signature of a responsible official of the organization or other entity.

(d) The Department will give notice of any hearing to be held pursuant to a request submitted by an interested person or on its own motion. Notice will be given and such hearing conducted in accordance with the Department's administrative procedures.

(e) The exemption and schedule will become effective 30 days after notice of opportunity for hearing is given pursuant to paragraph (a) of this section if no timely request for hearing is submitted and the Department does not determine to hold a hearing on its own motion.

(6) Final schedule.

(a) If a public hearing is held pursuant to paragraph (5) above, the Department will take into consideration information obtained during such hearing, and revise the proposed schedule as necessary and prescribe the final schedule.

(b) Such schedule must require compliance 12 months after the issuance of the exemption.

(7) Extension for date of compliance.

(a) The final date for compliance provided in any schedule in the case of any exemption may be extended by the Department for a period not to exceed 3 years after the date of the issuance of the exemption if the public water system establishes that:

(i) The system cannot meet the standard without capital improvements which cannot be completed within the period of such exemption;



(ii) In the case of a system which needs financial assistance for the necessary improvements, the system has entered into an agreement to obtain such financial assistance; or,

(iii) The system has entered into an enforceable agreement to become a part of a regional public water system; and the system is taking all practicable steps to meet the standard.

(b) In the case of a system which does not serve more than 500 service connections and which needs financial assistance for the necessary improvements, an exemption granted under paragraph (a)(i) or (ii) may be renewed for one or more additional 2-year periods if the system establishes that it is taking all practicable steps to meet the requirements of paragraph (a) of this section.

(8) Bottled water, point-of-use and point-of-entry devices.

(a) The Department may require a public water system to use bottled water, point-of-use, or point-of-entry devices as a condition for granting an exemption from the requirements of R.61-58.5.B(2), D(2)(b) and N.

(b) Public water systems that use bottled water as a condition of obtaining an exemption from the requirements of R.61-58.5.B(2), D(2)(b) and N must meet the requirements set out in R.61-58.9.F(8).

(c) Public water systems that use point-of-use or point-of-entry devices as a condition for receiving an exemption must meet the requirements of R.61-58.9.F(9).

#### **D. Variances from the Maximum Contaminant Level for Total Trihalomethanes.**

(1) The following are identified as the best technology, treatment techniques or other means generally available for achieving compliance with the maximum contaminant level for total trihalomethanes (TTHM):

(a) Use of chloramines as an alternate or supplemental disinfectant or oxidant.

(b) Use of chlorine dioxide as an alternate or supplemental disinfectant or oxidant.

(c) Improved existing clarification for THM precursor reduction.

(d) Moving the point of chlorination to reduce TTHM formation and, where necessary, substituting for the use of chlorine as a pre-oxidant chloramines, chlorine dioxide or potassium permanganate.

(e) Use of powdered activated carbon for THM precursor or TTHM reduction seasonally or intermittently at dosages not to exceed 10 mg/L on an annual average basis.

(2) The Department will consider a request for a variance from the maximum contaminant level for total trihalomethanes only from a community system which has installed the best available technology or treatment method specified in paragraph (1) above unless the Department determines that such treatment method is not available and effective for TTHM control for the system. A treatment method will not be considered to be "available and effective" for an individual system if the treatment method would not be technically appropriate and technically feasible for that system or would only result in a marginal reduction in TTHM for the system. The Department's determination as to the availability and effectiveness of such treatment methods will be based upon studies by the system and other relevant information. If a system submits information intending to demonstrate that a treatment method is not available and effective for TTHM control for that system, the Department will make a finding whether this information supports a

decision that such treatment method is not available and effective for that system before requiring installation and/or use of such treatment method.

(3) Pursuant to R.61-58.9(B)(4)(c) - (g), the Department will issue a schedule of compliance that may require the system being granted the variance to examine the following treatment methods to determine the probability that any of these methods will significantly reduce the level of TTHM for that system and, if such probability exists, to determine whether any of these methods are technically feasible and economically reasonable, and that the TTHM reductions obtained will be commensurate with the costs incurred with the installation and use of such treatment methods for that system:

- (a) Introduction of off-line water storage for THM precursor reduction.
- (b) Aeration for TTHM reduction, where geographically and environmentally appropriate.
- (c) Introduction of clarification where not currently practiced.
- (d) Consideration of alternative sources of raw water.
- (e) Use of ozone as an alternate or supplemental disinfectant or oxidant.

(4) If the Department determines that a treatment method identified in paragraph (3) above is technically feasible, economically reasonable and will achieve TTHM reductions commensurate with the costs incurred with the installation and/or use of such treatment method for the system, the Department will require the system to install and/or use that treatment method in connection with its compliance schedule. The Department's determination will be based upon studies by the system and other relevant information. In no event will the Department require a system to install and/or use a treatment method not described in paragraph (1) or (3) above to obtain or maintain a variance from the TTHM maximum contaminant level or in connection with any variance compliance schedule.

#### **E. Variances from the Maximum Contaminant Level for Fluoride.**

(1) The following are identified as the best technology, treatment techniques or other means generally available for achieving compliance with the maximum contaminant level for fluoride:

- (a) Activated alumina absorption, centrally applied; and,
- (b) Reverse osmosis, centrally applied.

(2) The Department will consider a request for a variance from the maximum contaminant level for fluoride only from a community water system which has installed the best available technology or treatment method specified in paragraph (1) above unless the Department determines that such treatment method is not available and effective for fluoride control for the system. A treatment method will not be considered to be "available and effective" for an individual system if the treatment method would not be technically appropriate and technically feasible for that system. The Department's determination as to the availability and effectiveness of such treatment methods will be based upon studies by the system and other relevant information. If a system submits information to demonstrate that a treatment method is not available and effective for fluoride control for that system, the Department will make a finding whether this information supports a decision that such treatment method is not available and effective for that system before requiring installation and/or use of such treatment method.

(3) Pursuant to R.61-58.9(B)(4)(c)-(g), the Department will issue a schedule of compliance that may require the system being granted the variance to examine the following treatment methods to determine the probability that any of these methods will significantly reduce the level of fluoride for that system and, if such probability exists, to determine whether any of these methods are technically feasible and economically reasonable and that the fluoride reductions obtained will be commensurate with the costs incurred with the installation and use of such treatment methods for that system:

- (a) Modification of lime softening
- (b) Alum coagulation
- (c) Electrodialysis
- (d) Anion exchange resins
- (e) Well field management
- (f) Alternate source
- (g) Regionalization

(4) If the Department determines that a treatment method identified in paragraph (3) above or other treatment method is technically feasible, economically reasonable, and will achieve fluoride reductions commensurate with the costs incurred with the installation and/or use of such treatment method for the system, the Department will require the system to install and/or use that treatment method in connection with its compliance schedule. The Department's determination will be based upon studies by the system and other relevant information.

**F. Variances and Exemptions from the Maximum Contaminant Levels for Organic and Inorganic Chemicals and Exemptions from the Treatment Technique for Lead and Copper.**

(1) The following are identified as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for volatile organic chemicals as listed in R.61-58.5.N and the organic chemicals listed in R.61-58.5.D(2):

**BEST AVAILABLE TECHNOLOGIES FOR ORGANIC CONTAMINANTS**

<b>CAS Number</b>	<b>Contaminant</b>	<b>Granular Activated Carbon</b>	<b>Packed Tower Aeration</b>	<b>Oxidation</b>
15972-60-8	Alachlor	X		
116-06-3	Aldicarb	X		
1646-88-4	Aldicarb sulfone	X		
1646-87-3	Aldicarb sulfoxide	X		
1912-24-9	Atrazine	X		
71-43-2	Benzene	X	X	
50-32-8	Benzo(a)pyrene	X		
1563-66-2	Carbofuran	X		
56-23-5	Carbon tetrachloride	X	X	
57-74-9	Chlordane	X		
75-99-0	Dalapon	X		
94-75-7	2,4-D	X		

<b>CAS Number</b>	<b>Contaminant</b>	<b>Granular Activated Carbon</b>	<b>Packed Tower Aeration</b>	<b>Oxidation</b>
103-23-1	Di(2-ethylhexyl) adipate	X	X	
117-81-7	Di(2-ethylhexyl) phthalate	X		
96-12-8	Dibromochloropropane (DBCP)	X		
95-50-1	o-Dichlorobenzene	X	X	
106-46-7	para-Dichlorobenzene	X	X	
107-06-2	1,2-Dichloroethane	X	X	
75-35-4	1,1-Dichloroethylene	X	X	
156-59-2	cis-1,2-Dichloroethylene	X	X	
156-60-5	trans-1,2-Dichloroethylene	X	X	
75-09-2	Dichloromethane	X		
78-87-5	1,2-Dichloropropane	X	X	
88-85-7	Dinoseb	X		
85-00-7	Diquat	X		
145-73-3	Endothall	X		
72-20-8	Endrin	X		
100-41-4	Ethylbenzene	X	X	
1071-83-6	Glyphosate			X
76-44-8	Heptachlor	X		
1024-57-3	Heptachlor epoxide	X		
118-74-1	Hexachlorobenzene	X		
77-47-3	Hexachlorocyclopentadiene	X	X	
58-89-9	Lindane	X		
72-43-5	Methoxychlor	X		
108-90-7	Monochlorobenzene	X	X	
23135-22-0	Oxamyl (Vydate)	X		
87-86-5	Pentachlorophenol	X		
1918-02-1	Picloram	X		
1336-36-3	Polychlorinated biphenyls (PCB)	X		
122-34-9	Simazine	X		
100-42-5	Styrene	X	X	
1746-01-6	2,3,7,8-TCDD (Dioxin)	X		
127-18-4	Tetrachloroethylene	X	X	
108-88-3	Toluene	X	X	
8001-35-2	Toxaphene	X		
93-72-1	2,4,5-TP (Silvex)	X		
120-82-1	1,2,4-Trichlorobenzene	X	X	
71-55-6	1,1,1-Trichloroethane	X	X	
79-00-5	1,1,2-Trichloroethane	X	X	
79-01-6	Trichloroethylene	X	X	
75-01-4	Vinyl chloride	X		
1330-20-7	Xylene	X	X	

(2) The following are identified as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the inorganic contaminants listed in R.61-58.5(B)(2), except fluoride:

<b><u>CHEMICAL NAME</u></b>	<b><u>BAT(S)</u></b>
Antimony	2,7
Arsenic <sup>4</sup>	1, 2, 5, 6, 7, 9, 12 <sup>5</sup>

Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6 <sup>2</sup> ,7
Cyanide	5,7,10
Mercury	2 <sup>1</sup> ,4,6 <sup>1</sup> ,7 <sup>1</sup>
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2 <sup>3</sup> ,6,7,9
Thallium	1,5

<sup>1</sup> BAT only if influent Hg concentrations <10 µg/L.

<sup>2</sup> BAT for Chromium III only.

<sup>3</sup> BAT for Selenium IV only.

<sup>4</sup> BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V

<sup>5</sup> To obtain high removals, iron to arsenic ratio must be at least 20:1.

#### Key to BATs in Table

1 = Activated Alumina

2 = Coagulation/Filtration (not BAT for less than 500 service connections)

3 = Direct and Diatomite Filtration

4 = Granular Activated Carbon

5 = Ion Exchange

6 = Lime (not less than 500 service connections) BAT for systems softening

7 = Reverse Osmosis

8 = Corrosion Control

9 = Electrodialysis

10 = Chlorine

11 = Ultraviolet

12 = Oxidation/Filtration

(3) The Department identifies in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for arsenic:

#### SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTS)<sup>1</sup> FOR ARSENIC<sup>2</sup>

Small system compliance technology	Affordable for listed small system categories <sup>3</sup>
Activated Alumina (centralized)	All size categories
Activated Alumina (Point-of-Use) <sup>4</sup>	All size categories
Coagulation/Filtration <sup>5</sup>	501-3,300, 3,301-10,000
Coagulation-assisted Microfiltration	501-3,300, 3,301-10,000
Electrodialysis reversal <sup>6</sup>	501-3,300, 3,301-10,000
Enhanced coagulation/filtration	All size categories
Enhanced lime softening (pH> 10.5)	All size categories
Ion Exchange	All size categories
Lime Softening <sup>5</sup>	501-3,300, 3,301-10,000
Oxidation/Filtration <sup>7</sup>	All size categories

Small system compliance technology	Affordable for listed small system categories <sup>3</sup>
Reverse Osmosis (centralized) <sup>6</sup>	501-3,300, 3,301-10,000
Reverse Osmosis (Point-of-Use) <sup>4</sup>	All size categories

<sup>1</sup> Section 1412(b)(4)(E)(ii) of SDWA specifies that SSCTs must be affordable and technically feasible for small systems.

<sup>2</sup> SSCTs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

<sup>3</sup> The Act (ibid.) specifies three categories of small systems: (i) those serving 25 or more, but fewer than 501, (ii) those serving more than 500, but fewer than 3,301, and (iii) those serving more than 3,300, but fewer than 10,001.

<sup>4</sup> When POU or POE devices are used for compliance, programs to ensure proper long-term operation, maintenance, and monitoring must be provided by the water system to ensure adequate performance.

<sup>5</sup> Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.

<sup>6</sup> Technologies reject a large volume of water--may not be appropriate for areas where water quantity may be an issue.

<sup>7</sup> To obtain high removals, iron to arsenic ratio must be at least 20:1.

(4) The Department shall require community water systems and non-transient, non- community water systems to install and/or use any treatment method identified in paragraphs 1 and 2 of the section as a condition for granting a variance except as provided in paragraph (4) of this section. If, after the system's installation of the treatment method, the system cannot meet the MCL, that system shall be eligible for a variance under the provisions of section B above.

(5) If a system can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment methods identified in paragraphs 1 and 2 of the section would only achieve a de minimis reduction in contaminants, the Department may issue a schedule of compliance that requires the system being granted the variance to examine other treatment methods as a condition of obtaining the variance.

(6) If the Department determines that a treatment method identified in paragraph (4) of this section is technically feasible, the Department may require the system to install and/or use that treatment method in connection with a compliance schedule issued under the provisions of R.61-58.9.B(4)(c) through (g). The Department's determination shall be based upon studies by the system and other relevant information.

(7) The Department may require a public water system to use bottled water, point-of-use devices, point-of-entry devices or other means as a condition of granting a variance or an exemption from the requirements of R.61-58.5.B(2), D(2)(b) and N, to avoid an unreasonable risk to health. The Department may require a public water system to use bottled water and point-of-use devices or other means, but not point-of-entry devices, as a condition for granting an exemption from corrosion control treatment requirements for lead and copper in R.61-58.11.C and D to avoid an unreasonable risk to health. The Department may require a public water system to use point-of-entry devices as a condition for granting an exemption from the source water and lead service line replacement requirements for lead and copper under R.61-58.11.E or F to avoid an unreasonable risk to health.

(8) Public water systems that use bottled water as a condition for receiving a variance or exemption from the requirements of R.61-58.5.B(2), D(2)(b) and N, or an exemption from the requirements of R.61-58.11.C through F, must meet the requirements in either paragraph (a) or (b) of this section in addition to the requirements in paragraph (c) of this section:

(a) The public water system must develop and put in place a monitoring program approved by the Department that provides reasonable assurances that the bottled water meets all maximum contaminant

levels. The public water system must monitor a representative sample of the bottled water for all contaminants regulated under R.61- 58.5.B(2), D(2)(b) and N the first quarter that it supplies the bottled water to the public, and annually thereafter. Results of the monitoring program shall be provided to the Department annually.

(b) The public water system must obtain the bottled water from a bottled water company that has been permitted by the Department. The public water system must certify such to the Department the first quarter after it supplies bottled water and annually thereafter.

(c) The public water system is fully responsible for the provision of sufficient quantities of bottled water to every person supplied by the public water system, via door- to-door bottled water delivery.

(9) Public water systems that use point-of-use or point-of-entry devices as a condition for obtaining a variance or exemption from the maximum contaminant levels listed in R.61-58.5.B(2), D(2)(b) and N must meet the following requirements:

(a) It is the responsibility of the public water system to operate and maintain the point-of-use and/or point-of-entry treatment system.

(b) The public water system must develop a monitoring plan and obtain Department approval for the plan before point-of-use or point-of-entry devices are installed for compliance. This monitoring plan must provide health protection equivalent to a monitoring plan for central water treatment.

(c) Effective technology must be properly applied under a plan approved by the Department and the microbiological safety of the water must be maintained at all times.

(d) The public water system must provide adequate certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-use and/or point-of-entry devices.

(e) The design and application of the point-of-use and/or point-of-entry devices must consider the tendency for an increase in heterotrophic bacteria concentrations in water treated with activated carbon. It may be necessary to use frequent backwashing, post- contactor disinfection, and Heterotrophic Plate Count monitoring to ensure that the microbiological safety of the water is not compromised.

(f) All consumers shall be protected. Every building connected to the system must have a point-of-use or point-of-entry device installed, maintained, and adequately monitored. The Department must be assured by the public water system that every building is subject to treatment and monitoring, and that the rights and responsibilities of the public water system customer convey with title upon sale of the property.

(g) In requiring the use of a point-of-entry device as a condition for granting an exemption from the treatment requirements for lead and copper under R.61-58.11.E or F, the Department must be assured that use of the device will not cause increased corrosion of lead and copper bearing materials located between the device and the tap that could increase contaminant levels at the tap.

#### **G. Variances and Exemptions from the Maximum Contaminant Level for Total Coliforms.**

(1) The following are identified as the best technology, treatment techniques, or other means available for achieving compliance with the MCL for total coliforms:

(a) Protection of wells from contamination by coliforms by appropriate placement and construction;

- (b) Maintenance of a disinfectant residual throughout the distribution system;
- (c) Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system;
- (d) Filtration and/or disinfection of surface water, as described in R.61-58.10, or disinfection of ground water using strong oxidants such as chlorine, chlorine dioxide, or ozone; or
- (e) The development and implementation of an EPA-approved State Wellhead Protection Program under section 1428 of the Federal Safe Drinking Water Act.

(2) No variances or exemptions from the maximum contaminant levels in R.61-58.5.F or the treatment technique requirements of R.61-58.10 are permitted. In accordance with EPA rules, the Department has stayed the effective date of this section relating to the total coliform MCL of R.61- 58.5.F(1) for systems that demonstrate to the Department that the violation of the total coliform MCL is due to persistent growth of total coliforms in the distribution system rather than fecal or pathogenic contamination, a treatment lapse or deficiency, or a problem in the operation or maintenance of the distribution system. This is stayed until March 31, 2016, at which time the total coliform MCL is no longer effective.

**H. Variances and Exemptions from the Filtration and Disinfection Requirements.**

- (1) No variances from the filtration and disinfection requirements are permitted.
- (2) No exemptions from the disinfection requirements of R.61-58.10.D(1)(c) and (2)(b) are permitted.

**I. Variances and Exemptions from the Maximum Contaminant Levels for Radionuclides.**

(1) The following are identified as the best available technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for radionuclides listed in R.61-58.5.H(2), (3), (4), and (5), for the purposes of issuing variances and exemptions, as shown in Table A to this paragraph.

**TABLE A: BAT FOR RADIONUCLIDES LISTED IN R.61-58.5.H**

Contaminant	BAT
Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening.
Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/filtration.
Gross alpha particle activity (excluding radon and uranium)	Reverse osmosis.
Beta particle and photon radioactivity	Ion exchange, reverse osmosis.

(2) In addition, the following are identified as the best available technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in R.61-58.5.H(2), (3), (4), and (5), for the purposes of issuing variances and exemptions to small drinking water systems, defined here as those serving 10,000 persons or fewer, as shown in Table C to this paragraph.



**TABLE B: LIST OF SMALL SYSTEMS COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES AND LIMITATIONS TO USE**

Unit technologies	Limitations (see foot- notes)	Operator skill level required <sup>1</sup>	Raw water quality range & considerations <sup>1</sup>
1. Ion exchange (IE)	( <sup>a</sup> )	Intermediate	All ground waters.
2. Point of use (POU <sup>2</sup> ) IE	( <sup>b</sup> )	Basic	All ground waters.
3. Reverse osmosis (RO)	( <sup>c</sup> )	Advanced	Surface waters usually require pre-filtration.
4. POU <sup>2</sup> RO	( <sup>b</sup> )	Basic	Surface waters usually require pre-filtration.
5. Lime softening	( <sup>d</sup> )	Advanced	All waters.
6. Green sand filtration	( <sup>e</sup> )	Basic	
7. Co-precipitation with barium sulfate	( <sup>f</sup> )	Intermediate to Advanced	Ground waters with suitable water quality.
8. Electrodialysis/ electrodialysis reversal		Basic to Intermediate	All ground waters.
9. Pre-formed hydrous manganese oxide filtration	( <sup>g</sup> )	Intermediate	All ground waters.
10. Activated alumina	( <sup>a</sup> ), ( <sup>h</sup> )	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency
11. Enhanced coagulation/ filtration	( <sup>i</sup> )	Advanced.	Can treat a wide range of water qualities.

<sup>1</sup> National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997.

<sup>2</sup> A POU, or "point-of-use" technology is a treatment device installed at a single tap used for the purpose of reducing contaminants in drinking water at that one tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000 NODA for more details.

Limitations Footnotes: Technologies for Radionuclides:

<sup>a</sup> The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.

<sup>b</sup> When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.

<sup>c</sup> Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR compliance technologies table.

<sup>d</sup> The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.

<sup>e</sup> Removal efficiencies can vary depending on water quality.

<sup>f</sup> This technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.

<sup>g</sup> This technology is most applicable to small systems that already have filtration in place.

<sup>h</sup> Handling of chemicals required during regeneration and pH adjustment may be too difficult for small systems without an adequately trained operator.

<sup>i</sup> Assumes modification to a coagulation/filtration process already in place.

**TABLE C: BAT FOR SMALL COMMUNITY WATER SYSTEMS FOR THE RADIONUCLIDES LISTED IN R.61-58.5.H**

Contaminant	Compliance technologies <sup>1</sup> for system size categories (population served)		
	25-500	501-3,300	3,300-10,000
Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
Gross alpha particle activity	3, 4	3, 4	3, 4
Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

<sup>1</sup> Note: Numbers correspond to those technologies found listed in the Table B to this paragraph.

(3) The Department shall require community water systems to install and/or use any treatment technology identified in Table A to this section, or in the case of small water systems (those serving 10,000 persons or fewer), Table B and Table C of this section, as a condition for granting a variance except as provided in paragraph (4) of this section. If, after the system's installation of the treatment technology, the system cannot meet the MCL, that system shall be eligible for a variance under the provisions of this section.

(4) If a community water system can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment technologies identified in this section would only achieve a de minimus reduction in the contaminant level, the Department may issue a schedule of compliance that requires the system being granted the variance to examine other treatment technologies as a condition of obtaining the variance.

(5) If the Department determines that a treatment technology identified under paragraph (4) of this section is technically feasible, the Administrator or the Department may require the system to install and/or use that treatment technology in connection with a compliance schedule issued under the provisions of this section. The Department's determination shall be based upon studies by the system and other relevant information.

(6) The Department may require a community water system to use bottled water, point-of-use devices, point-of-entry devices or other means as a condition of granting a variance or an exemption from the requirements of R.61-58R.5.6.H1 of this regulation, to avoid an unreasonable risk to health.

(7) Community water systems that use bottled water as a condition for receiving a variance or an exemption from the requirements of R.61-58R.5.6.H1 of this regulation must meet the requirements specified in Section F(7)(a) through (c) above.

(8) Community water systems that use point-of-use or point-of-entry devices as a condition for obtaining a variance or an exemption from the radionuclides SPDWRs must meet the conditions in Section F(8) above.