

# **ANNUAL COMPLIANCE REPORT**

## **SOUTH DAKOTA PUBLIC WATER SYSTEM VIOLATIONS**

for the period  
January 1 2010 – December 31, 2010

### **INTRODUCTION**

This annual Compliance Report has been developed to meet the requirements of section 1414 of the 1996 Amendments to the Safe Drinking Water Act. The time period covered in this report is January 1, 2010, through December 31, 2010. A copy of this report is being made available to the public.

### **Protecting Drinking Water in South Dakota**

The U.S. Environmental Protection Agency (EPA) established a public drinking water system program under the authority of the 1974 Safe Drinking Water Act. The Safe Drinking Water Act allows States to seek EPA approval to administer their own public drinking water program. The authority to run a public drinking water system program is called primacy, a short term for primary enforcement responsibility. To receive primacy, States must meet certain requirements, including the adoption of drinking water regulations that are at least as stringent as the federal regulations and a demonstration that the State can enforce the program requirements. South Dakota met the requirements and was granted primacy by EPA in 1984.

Under the Safe Drinking Water Act and the 1986 Amendments to the Safe Drinking Water Act, both the state and EPA set limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as drinking water standards. For some regulations, a treatment technique is established in place of a drinking water standard to control unacceptable levels of contaminants in drinking water. The State and EPA also regulate how often public water systems monitor their water for contaminants. Generally, the larger the population served by a drinking water system, the more frequent the monitoring and reporting requirements. In addition to monitoring for regulated contaminants, public water systems are also required to monitor for unregulated contaminants to provide data for future regulatory development. Finally, the State and EPA require public water systems to notify their consumers when they have a violation of the regulations. The 1996 Amendments to the Safe Drinking Water Act require that public notifications include a clear and understandable explanation of the nature of the violation. The public notice must also specify any potential adverse health effects, steps the public water system has taken or will be taking to correct the violation and alternative water sources available during the violation.

## Glossary of Terms

**Filtered Systems:** Water systems that have installed filtration treatment.

**Inorganic Chemicals (IOCs):** Non-carbon based compounds such as metals, nitrate, and asbestos. These contaminants are naturally occurring in some water, but can get into water through chemical manufacturing, farming, and other man-made pollution sources.

**Lead and Copper Rule:** This rule established national limits on lead and copper in drinking water. Lead and copper corrosion poses various health risks when ingested at any level and can enter drinking water from household pipes and plumbing fixtures.

*Initial lead and copper tap M/R (monitoring/reporting):* A violation where a system did not meet initial lead and copper testing requirements, or failed to report the results of those tests to the state.

*Follow-up or routine lead and copper tap M/R:* A violation where a system did not meet follow-up or routine lead and copper tap testing requirements, or failed to report the results.

*Treatment installation:* Violations for failing to install optimal corrosion control treatment or source water treatment which would reduce lead and copper levels in water at the tap.

*Public Education:* A violation where a system did not provide required public education about reducing or avoiding lead intake from water.

**Monitoring:** EPA and the State specify what tests a water system must collect samples for and the frequency of that sample collection. A water system that does not collect the proper types of samples or does not follow the frequency schedule is in violation.

**Organic Contaminants:** Carbon-based compounds, such as industrial solvents and pesticides. This category includes both synthetic organic chemicals (SOCs) and volatile organic chemicals (VOCs). The contaminants generally get into water by discharge from factories and runoff from cropland.

**Radionuclides:** Radioactive particles that can occur naturally in water or result from man-made pollution sources.

**Surface Water Treatment Rule and Interim Enhanced Surface Water Treatment Rule:** These rules establish criteria under which water systems supplied by surface water, or ground water under the direct influence of surface water, must filter and disinfect their water. Violations of these rules are reported for the following four categories:

*Monitoring, routine/repeat (for filtered systems):* A violation for failing to carry out required tests, or reporting the results of the tests.

*Treatment Techniques (for filtered systems):* A violation for failing to properly treat its water.

*Monitoring, routine/repeat (for unfiltered systems):* A violation for failing to carry out required water tests, or reporting the results of those tests.

*Failure to filter (for unfiltered systems):* A violation for failing to properly treat its water.

**Total Coliform Rule:** This rule establishes regulations for microbiological contaminants in drinking water. These contaminants can cause immediate risks to health. If no samples are collected during the one-month compliance period, a significant monitoring violation occurs.

*Acute MCL (maximum contaminant level) violation:* A violation where the system found fecal coliform or E. coli, potentially harmful bacteria, in its water, thereby a violation of the rule.

*Non-acute MCL violation:* A violation where the system found total coliform bacteria in samples of its water at a frequency or at a level that violates the rule. For systems collecting fewer than 40 samples per month, more than one positive sample for total coliform is a violation. For systems collecting 40 or more samples per month, if more than 5% of the samples are positive for total coliform there is a violation.

*Major routine and follow-up monitoring:* A violation where a system did not perform any monitoring.

**Disinfection Byproducts (DBP) Rule:** This rule applies to community water systems that add a disinfectant to their water. The rule establishes regulations for disinfection by-products formed from the use of disinfectants such as chlorine, chlorine dioxide, and ozone. Two classes of by-products are regulated, total trihalomethanes (TTHMs) and haloacetic acids (HAA5). Systems monitoring requirements depend on population served, source type (ground water vs. surface water supplies) and the number of plants that supply water to their system.

**Treatment Techniques:** A treatment process that leads to a reduction in the level of a contaminant sufficient to meet drinking water standards. For purposes of this report, treatment techniques are specified for the Surface Water Treatment Rule and Interim Enhanced Surface Water Treatment Rule to reduce or remove contaminants that cannot be feasibly or economically measured in a laboratory, the Disinfection Byproducts Rule for precursor removal and certified operator requirements, and for the Lead and Copper Rule to remove or reduce the corrosivity of the drinking water.

**Unfiltered Systems:** Water systems that do not need to filter their water before disinfecting it because the source is very clean.

**Violation:** A failure to meet any state or federal drinking water regulation.

## **The Drinking Water Program: An Overview**

### **Public Water System**

A public water system is defined as a water system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of 25 people for at least 60 days each year. There are three types of public water systems - community (towns, housing developments, rural water systems), nontransient noncommunity (schools, day care centers, factories), or transient noncommunity systems (rest stops, parks, or campgrounds). In South Dakota 456 systems are classified as Community Water Systems, 27 are classified as Nontransient Noncommunity Water Systems, and 169 are classified as Transient Noncommunity Water Systems for a total of 652.

### **Drinking Water Standard**

Under the Safe Drinking Water Act, the State and EPA set limits on the highest amount of contaminant that is allowed in drinking water to ensure that the water is safe for human consumption. These limits are known as drinking water standards.

### **Treatment Techniques**

For some regulations, treatment techniques are established in place of a drinking water standard to control unacceptable levels of certain contaminants. For example, treatment techniques have been established to control viruses, bacteria, and turbidity (cloudiness) in drinking water.

### **Monitoring**

A public water system is required to monitor and verify that the levels of contaminants present in the drinking water do not exceed the drinking water standard. If a public water system fails to have its drinking water tested as required or fails to report test results to the state, a monitoring violation occurs.

### **Significant Monitoring Violations**

For this report, significant monitoring violations are defined as any major monitoring violation that has occurred during the calendar year of the report. A major monitoring violation (except for the surface water treatment rule) occurs when samples are not taken, or results are not reported during a compliance period. A major surface water treatment rule monitoring/reporting violation occurs when fewer than 10% of the required samples are taken, or results are not reported during a reporting interval. A minor violation occurs when some, but not all, of the required numbers of samples are taken.

### **Consumer Notification**

Every community public water system is required to prepare and provide to its customers a brief Annual Water Quality Report, also referred to as the Consumer Confidence Report. This report is to include some educational material, and will provide information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations.

## **Significant Consumer Notification Violations**

For this report, a significant public notification violation occurred if a community water system completely failed to prepare and provide it customers the required annual report.

## **Annual State PWS Report**

South Dakota submits data to EPA on a quarterly basis. Data submitted includes: public water system inventory statistics, drinking water standards violations, major monitoring/reporting violations, treatment technique violations, and enforcement actions taken against violators. The annual compliance report that South Dakota is required to submit to EPA will provide a total annual representation of the numbers of violations for: a) drinking water standards, b) treatment techniques, c) variances and exemptions, and d) significant monitoring violations. The information in attached compliance report tables is based on data retrieved from EPA and verified against the state's database.

## **Summary of Table Information**

The overall quality of drinking water available to South Dakota public water system consumers remains good. As indicated in Table 1, there were a few violations of organic and other chemical standards. Approximately 96% of community water systems were in compliance with the drinking water standards for total coliform during 2010.

Information on the table shows there were no organic chemical violations. South Dakota is not an industrial state. The absence of organic chemicals in drinking water supplies, especially those associated with solvent use is not surprising. Agriculture is a principal part of the South Dakota economy. Having no pesticide violations indicates that the use of properly constructed public drinking water wells, and good chemical and land use management practices by farmers and ranchers minimizes impacts to sources of drinking water used by public water systems.

Monitoring and reporting violations for Volatile and Synthetic Organic Chemicals (VOCs and SOCs) from 2007 to 2008 remains consistent and the overall percentage of systems that complied with all monitoring was 96% and 99% respectively. The number of violations for VOCs and SOCs is also misleading in that when either a single VOC or SOC sample is not taken, it accounts for 21 and 32 individual violations respectively. Those are the number of individual chemicals that are analyzed from a single sample.

The inorganic chemicals (IOCs) group compliance also remained consistent with 2009 compliance rates. The primary concern in this group is again attributed to the arsenic standard. Systems that violate the standard continue to work toward returning to compliance either through changes in treatment or development of a new source of supply.

The tables indicate that radionuclide violations were slightly higher with 3% of the community water systems having violations during 2010. The majority of the systems in violation are at or near the drinking water standard for combined radium. The department will continue to take appropriate enforcement actions to address the violations of the radionuclide standards to ensure compliance with EPA's standards. Most systems are pursuing an alternative source or exploring treatment alternatives.

New requirements associated with the Stage 2 Disinfection By-product rule became effective in 2009. The number of systems required to monitor and report for the new rule rose from 205 systems in 2008 to 409 systems in 2009. This large increase in systems continues to

result in higher violation numbers. This is typically the result when new rule requirements become effective. The monitoring and reporting violations are expected to improve as systems get up to speed with the new rule requirements. Small systems with part-time operators generally have the most difficulty when new monitoring and reporting requirements are added to their workload. The compliance rate dropped again in 2010 and we continue to work with these systems to achieve compliance with the new rule requirements.

New to Table 1 this year is compliance information related to the groundwater rule. This data is found at the end of Table 1. Compliance rates for the groundwater rule are high with 99% compliance with treatment techniques and 98% of systems complying with the monitoring and reporting requirements..

### **Compliance Report Table**

The attached compliance report, Table 2, provides a listing of each contaminant regulated under the Safe Drinking Water Act with the corresponding number of drinking water standards, treatment techniques, and significant monitoring violations. Also listed is the number of systems responsible for the violations for each contaminant.

One of the annual compliance report categories to be reported is the number of violations of variances and exemptions. However, no data is provided for this category because no variances or exemptions have been issued in South Dakota.

### **Availability of Annual Compliance Report (ACR)**

Electronic versions in PDF format will be available at our web address <http://denr.sd.gov/des/dw/complianceinfo.aspx>. Also available from our web site are annual compliance reports from previous years that viewers may use for comparison purposes.

South Dakota's Annual Compliance Report is also available by contacting the South Dakota Department of Environment and Natural Resources, Drinking Water Program, PMB-2020, Joe Foss Building, 523 East Capitol Ave, Pierre, SD 57501, Attention: Mark S. Mayer, P.E. (605) 773-3754 (phone) or [mark.mayer@state.sd.us](mailto:mark.mayer@state.sd.us) (email). The SD Drinking Water Program will provide a summary of this report upon request.

State: South Dakota  
Reporting Interval: CY 2010

Table 1

Date-February 4, 2011	Drinking Water Standards			Treatment Techniques			Monitoring/Reporting		
	Total Number of Systems Required to Monitor	Total Number of Systems in Violation	Percentage of Systems with No Violations	Total Number of Systems Required to Monitor	Total Number of Systems in Violation	Percentage of Systems with No Violations	Total Number of Systems Required to Monitor	Total Number of Systems in Violation	Percentage of Systems with No Violations
<b><i>Volatile Organic Chemicals (VOCs)</i></b>									
Community Water Systems	289	0	100%				289	1	100%
Transient Noncommunity Water Systems									
Nontransient Noncommunity Water Systems	27	0	100%				27	0	100%
<b><i>Synthetic Organic Chemicals (SOCs)</i></b>									
Community Water Systems	289	0	100%	20	0	100%	289	1	100%
Transient Noncommunity Water Systems									
Nontransient Noncommunity Water Systems	27	0	100%				27	0	100%
<b><i>Inorganic Chemical (IOCs)</i></b>									
Community Water Systems	289	7	98%				289	3	99%
Transient Noncommunity Water Systems	169	2	99%				169	4	98%
Nontransient Noncommunity Water Systems	27	4	85%				27	1	96%
<b><i>Radionuclides</i></b>									
Community Water Systems	289	9	97%				289	2	99%
Transient Noncommunity Water Systems									
Nontransient Noncommunity Water Systems									
<b><i>Total Coliform Rule</i></b>									
Community Water Systems	456	16	96%				456	16	96%
Transient Noncommunity Water Systems	169	11	93%				169	19	89%
Nontransient Noncommunity Water Systems	27	1	96%				27	1	96%
<b><i>Surface Water Treatment Rule</i></b>									
Community Water Systems				19	0	100%	19	0	100%
Transient Noncommunity Water Systems									
Nontransient Noncommunity Water Systems									
<b><i>Lead and Copper Rule</i></b>									
Community Water Systems				456	6	99%	456	7	98%
Transient Noncommunity Water Systems									
Nontransient Noncommunity Water Systems				27	0	100%	27	1	96%
<b><i>Consumer Confidence Reports</i></b>									
Community Water Systems							456	7	98%
Transient Noncommunity Water Systems									
Nontransient Noncommunity Water Systems									

<b>Disinfection By-Products</b>									
Community Water Systems	409	0	100%	409	71	83%	409	35	91%
Transient Noncommunity Water Systems									
Nontransient Noncommunity Water Systems	14	0	100%	14	3	79%	14	0	100%
<b>Public Notification</b>									
Community Water Systems							456	18	96%
Transient Noncommunity Water Systems							169	70	59%
Nontransient Noncommunity Water Systems							27	6	78%
<b>Groundwater Rule</b>									
Community Water Systems				437	4	99%	437	10	98%
Transient Noncommunity Water Systems				169	0	100%	169	7	96%
Nontransient Noncommunity Water Systems				27	0	100%	27	0	100%



**Table 2**

**State: South Dakota**  
**Reporting Interval: CY 2010**  
 Date-February 4, 2011

	Drinking Water Standard (mg/l)	Drinking Water Standards		Treatment Techniques		Monitoring/Reporting	
		Number of Violations	Number of Systems w/ Violations	Number of Violations	Number of Systems w/ Violations	Number of Violations	Number of Systems w/ Violations
<b><i>Volatile Organic Chemicals (VOCs)</i></b>							
Vinyl Chloride	0.002	0	0			4	1
Benzene	0.005	0	0			4	1
Carbon Tetrachloride	0.005	0	0			4	1
1,2-Dichloroethane	0.005	0	0			4	1
Trichloroethylene	0.005	0	0			4	1
p-Dichlorobenzene	0.075	0	0			4	1
1,1-Dichloroethylene	0.007	0	0			4	1
1,1,1-Trichloroethane	0.2	0	0			4	1
cis-1,2-Dichloroethylene	0.07	0	0			4	1
1,2-Dichloropropane	0.005	0	0			4	1
Ethylbenzene	0.7	0	0			4	1
Monochlorobenzene (Chlorobenzene)	0.1	0	0			4	1
o-Dichlorobenzene	0.6	0	0			4	1
Styrene	0.1	0	0			4	1
Tetrachloroethylene	0.005	0	0			4	1
Toluene	1	0	0			4	1
Trans-1,2-Dichloroethylene	0.1	0	0			4	1
Xylenes, Total	10	0	0			4	1
Dichloromethane (Methylene Chloride)	0.005	0	0			4	1
1,2,4-Trichlorobenzene	0.07	0	0			4	1
1,1,2-Trichloroethane	0.005	0	0			4	1
<b><i>Subtotal</i></b>		<b><i>0</i></b>	<b><i>0</i></b>			<b><i>84</i></b>	<b><i>7</i></b>

<i>Synthetic Organic Chemicals</i>							
Alachlor (Lasso)	0.002	0	0			4	1
Atrazine	0.003	0	0			4	1
Carbofuran	0.04	0	0			4	1
Chlordane	0.002	0	0			4	1
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0	0			4	1
2,4-D	0.07	0	0			4	1
Ethylene Dibromide (EDB)	0.00005	0	0			4	1
Heptachlor	0.0004	0	0			4	1
Heptachlor epoxide	0.0002	0	0			4	1
BHC-gamma (Lindane)	0.0002	0	0			4	1
Methoxychlor	0.04	0	0			4	1
Total Polychlorinated Biphenyls (PCBs)	0.0005	0	0			4	1
Pentachlorophenol	0.001	0	0			4	1
Toxaphene	0.003	0	0			4	1
2,4,5-TP (Silvex)	0.05	0	0			4	1
Benzo (A) Pyrene	0.0002	0	0			4	1
Dalapon	0.2	0	0			4	1
Di (2-Ethylhexyl) adipate	0.4	0	0			4	1
Di (2-Ethylhexyl) phthalate	0.006	0	0			4	1
Dinoseb	0.007	0	0			4	1
Diquat	0.02	0	0			4	1
2,3,7,8-TCDD (Dioxin)	$3 \times 10^{-9}$	0	0			0	0
Endothall	0.1	0	0			4	1
Endrin	0.002	0	0			4	1
Glyphosate	0.7	0	0			4	1
Hexachlorobenzene (HCB)	0.001	0	0			4	1
Hexachlorocyclopentadiene	0.05	0	0			4	1
Oxamyl (Vydate)	0.2	0	0			4	1
Picloram	0.5	0	0			4	1
Simazine	0.004	0	0			4	1
Acrylamide				0	0		
Epichlorohydrin				0	0		
Total Trihalomethanes	0.1	0	0			0	0
<i>Subtotal</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>116</i>	<i>7</i>

<b><i>Inorganic Chemical (IOCs )</i></b>							
Antimony	0.006	0	0			1	1
Arsenic	0.010	27	8			1	1
Barium	2	0	0			1	1
Beryllium	0.004	0	0			1	1
Cadmium	0.005	0	0			1	1
Chromium	0.1	0	0			1	1
Fluoride	4	4	2			2	2
Mercury	0.002	0	0			1	1
Nickel	NA					1	1
Nitrate	10	5	4			9	6
Nitrite	1	0	0			3	3
Selenium	0.05	0	0			1	1
Thallium	0.002	0	0			1	1
Cyanide	0.2	0	0			0	0
Asbestos (fibers 10 µm long)	7 million fibers/L	0	0			0	0
<b><i>Subtotal</i></b>		<b><i>36</i></b>	<b><i>13</i></b>			<b><i>24</i></b>	<b><i>8</i></b>

<b><i>Radionuclides</i></b>							
Gross alpha	15 pCi/L	14	6			2	2
Combined Radium 226 / Radium 228	5 pCi/L	14	6			2	2
Uranium	.030	0	0			2	2
Gross beta	4 mrem/yr	0	0			0	0
<b><i>Subtotal</i></b>		<b><i>28</i></b>	<b><i>9</i></b>			<b><i>6</i></b>	<b><i>2</i></b>

<b><i>Total Coliform Rule</i></b>							
Acute MCL	Presence	2	2				
Non-acute MCL (monthly)	Presence	39	28				
Major routine and follow up monitoring						49	36
<b><i>Subtotal</i></b>		<b><i>41</i></b>	<b><i>28</i></b>			<b><i>49</i></b>	<b><i>36</i></b>

<b>Surface Water Treatment Rule</b>							
Filtered Systems							
Monitoring, routine/repeat						0	0
Treatment Techniques				0	0		
Unfiltered Systems							
Monitoring, routine/repeat						0	0
Failure to filter				0	0		
<i>Subtotal</i>				<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

<b>Lead and Copper Rule</b>							
Initial lead and copper tap M/R						0	0
Follow-up or routine lead and copper tap M/R						8	8
Treatment installation				0	0		
Public Education				15	6		
<i>Subtotal</i>				<i>15</i>	<i>6</i>	<i>8</i>	<i>8</i>

<b>Consumer Confidence Reports</b>							
Complete failure to report						8	7

<b>Disinfection By-Products</b>							
THMs/HAA5s	80 ug/l/60 ug/l	0	0	0	0	0	0
Chlorine Residuals/IDSE's	4	0	0			41	34
Precursors/OpCert	NA			76	74	1	1
<i>Subtotal</i>		<i>0</i>	<i>0</i>	<i>76</i>	<i>74</i>	<i>42</i>	<i>35</i>

<b>Public Notification</b>							
Complete failure to report						295	94

<b>Groundwater Rule</b>							
Groundwater Rule				6	4	33	17

**Table 3**

**State: South Dakota**

**Reporting Interval: CY 2010**

Date-February 4, 2011

	Drinking Water Standards		Treatment Techniques		Monitoring/Reporting		Consumer Notification	
	Number of Violations	Number of Systems w/ Violations	Number of Violations	Number of Systems w/ Violations	Number of Violations	Number of Systems w/ Violations	Number of Violations	Number of Systems w/ Violations
<b>Chemical Rules</b>								
Volatile Organic Chemicals (VOCs)	0	0			84	1		
Synthetic Organic Chemicals (SOCs)	0	0	0	0	116	1		
Inorganic Chemicals (IOCs)	36	13			24	8		
Radiological Chemicals (Rads)	28	9			6	2		
<b>Chemical Rules</b>	<b>64</b>	<b>21</b>	<b>0</b>	<b>0</b>	<b>230</b>	<b>9</b>		
<b>Total Coliform Rule (TCR)</b>	<b>41</b>	<b>28</b>			<b>49</b>	<b>36</b>		
<b>Surface Water Treatment (SWTR)</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Lead/Copper Rule (LCR)</b>			<b>15</b>	<b>6</b>	<b>8</b>	<b>8</b>		
<b>Consumer Notification Rule (CCR)</b>							<b>8</b>	<b>7</b>
<b>Public Notification (PN)</b>							<b>295</b>	<b>94</b>
<b>Disinfection By-Products (DBP)</b>	<b>0</b>	<b>0</b>	<b>76</b>	<b>74</b>	<b>42</b>	<b>35</b>		
<b>Groundwater Rule (GWR)</b>			<b>6</b>	<b>4</b>	<b>33</b>	<b>17</b>		
<b>Totals</b>	<b>105</b>	<b>48</b>	<b>97</b>	<b>80</b>	<b>362</b>	<b>74</b>	<b>303</b>	<b>96</b>

	Number of Violations	Number of Systems w/ Violations	Population Affected
<b>Grand Total for All Violations</b>	<b>867</b>	<b>228</b>	<b>255656</b>