APPENDIX G

CHAPTER 74:54:01
GROUNDWATER QUALITY STANDARDS

Sec.
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74:54:01:01. Definitions

Words defined in SDCL 34A-2-2 have the same meaning when used in this chapter. In addition, terms used in this chapter mean:

(1) "Ambient," the constituents or parameters and the concentration or measurements which describe water quality prior to a subsurface discharge;

(2) "Contaminant," any physical, chemical, biological, or radiological substance or matter in water potentially harmful to human health;

(3) "Groundwater," water below the land surface that is in the zone of saturation;

(4) "EPA," the United States Environmental Protection Agency;

(5) "mg/L," milligrams per liter;

(6) "pH," a measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with alkalinity and decreasing with acidity;

(7) "Picocurie," that quantity of radioactive material producing 2.22 nuclear transformations per minute;

(8) "Pollutant," dredged spoil, solid waste, incinerator residue, sewage, sewage sludge, garbage, trash, chemical waste, biological material, radioactive material, heat, wrecked or discarded equipment, rock, sand, or any industrial, municipal, or agricultural waste discharged into waters of the state;

(9) "Secretary," the secretary of the Department of Environment and Natural Resources or a representative designated to act for the secretary;

(10) "Total dissolved solids," "TDS," a term that expresses the quantity of dissolved material in a sample of water, which is determined by weighing the solid residue obtained by evaporating a measured volume of filtered sample to dryness at 356 degrees Fahrenheit.

Source:

14 SDR 86, effective December 24, 1987; 18 SDR 128, effective February 11, 1992; transferred from § 74:03:15:01, July 1, 1996.

General Authority:

SDCL 34A-2-11.

Law Implemented:

SDCL 34A-2-10, 34A-2-11.

74:54:01:02. Toxic pollutant defined

A toxic pollutant is a water contaminant or combination of water contaminants in a concentration or concentrations which, upon exposure, ingestion, inhalation, or assimilation either directly from the environment or indirectly by ingestion through food chains, will unreasonably threaten or injure human health or the health of animals or plants. As used in this section, injuries to health include death, histopathologic change, depression of immune system, clinical symptoms of disease, behavioral abnormalities, genetic mutation, physiological malfunctions, and physical deformations in such organisms or their offspring. In order to be considered a toxic pollutant a contaminant must be one or a combination of the potential toxic pollutants shown by scientific information currently available to the public to have potential for causing one or more of the effects listed in this section.

Source:

18 SDR 128, effective February 11, 1992; transferred from § 74:03:15:01.01, July 1, 1996.

General Authority:

SDCL 34A-2-11.

Law Implemented:

SDCL 34A-2-10, 34A-2-11.

74:54:01:03. Classification of groundwater

The existing and future beneficial uses of groundwater shall be maintained and protected. Waters of the state in which ambient water quality is better than the minimum levels prescribed shall be maintained and protected at the better water quality.

Groundwater which has an ambient concentration of 10,000 mg/L or less total dissolved solids (TDS) is classified as having the beneficial use of drinking water supplies, suitable for human consumption.

If the ambient concentration of any water contaminant in the groundwater is in conformance with the standards in § 74:54:01:04, degradation of the groundwater to the limit of the standards may be permitted as specified in chapter 74:54:02 to accommodate necessary economic or social development upon approval of a water quality variance permit.

No water quality standards may be violated or designated beneficial uses be impaired by the granting of a water quality variance permit allowing degradation of groundwater quality. If the groundwater quality does not meet the standards in § 74:54:01:04 as a result of natural causes or conditions, no degradation of the groundwater beyond the ambient concentration may be allowed.

Source:

14 SDR 86, effective December 24, 1987; 18 SDR 128, effective February 11, 1992; transferred from § 74:03:15:02, July 1, 1996.

General Authority:

SDCL 34A-2-11.

Law Implemented:

SDCL 34A-2-10, 34A-2-11.

74:54:01:04. Standards for groundwater of 10,000 mg/L TDS concentration or less

The following standards are the allowable pH range and maximum allowable concentration in groundwater of 10,000 mg/L TDS concentration or less for the contaminants specified unless the ambient condition exceeds the standards. Regardless of whether there is one contaminant or more than one contaminant present in groundwater, when the ambient pH or concentration of any water contaminant exceeds the standard specified in this section, the ambient pH or concentration is the allowable limit, provided that the discharge at such concentrations will not result for the present or the reasonably foreseeable future in concentrations at any place of groundwater withdrawal in excess of the standards in this section.

These standards apply to the dissolved portion of the contaminants specified, with the exception of mercury and the organic compounds, using the definition of "dissolved" given in the publication "Methods for Chemical Analysis of Water and Wastes," U.S. Environmental Protection Agency (1983). The standards for mercury and the organic compounds apply to the total unfiltered concentrations of the contaminants.

Groundwater must meet the standards listed as follows unless otherwise provided by chapters 74:54:01 and 74:54:02:

TABLE ONE

Human Health Standards

Contaminant	Level
Alachlor	0.002 mg/L
Aldicarb	0.003 mg/L
Aldicarb Sulfone	0.003 mg/L
Aldicarb Sulfoxide	0.004 mg/L
Arsenic (As)	0.05 mg/L
Atrazine	0.003 mg/L
Barium (Ba)	2 mg/L
Cadmium (Cd)	0.005 mg/L
Carbofuran	0.04 mg/L
Chloradane	0.002 mg/L
Chromium (Cr)	0.1 mg/L
Copper (Cu)	1.3 mg/L
Cyanide (CN) weak-acid dissociable	0.75 mg/L
Dibromochloropropane (DBCP)	0.0002 mg/L
o-Dichlorobenzene	0.6 mg/L
cis 1,2-Dichloroethylene	0.07 mg/L
trans 1,2-Dichloroethylene	0.1 mg/L
1,2-Dichloropropane	0.005 mg/L
Ethylbenzene	0.7 mg/L
Ethylene dibromide (EDB)	0.00005 mg/L
Fluoride (F)	2.4 mg/L
Heptachlor	0.0004 mg/L
Heptachlor epoxide	0.0002 mg/L
Lead (Pb)	0.015 mg/L
Mercury (Hg)	0.002 mg/L
Monochlorobenzene	0.1 mg/L
Nitrate as N	10 mg/L
Nitrite	1 mg/L
Pentachlorophenol	0.001 mg/L
Selenium (Se)	0.05 mg/L
Silver (Ag)	0.05 mg/L
Styrene	0.1 mg/L
Endrin	0.0002 mg/L
Lindane	0.0002 mg/L
Methoxychlor	0.04 mg/L
Tetrachloroethylene (PCE)	0.005 mg/L
Toluene	1 mg/L
Toxaphene	0.003 mg/L
2,4-D	0.07 mg/L
2,4,5-TP Silvex	0.05 mg/L
Total trihalomethanes, including trichloromethane (chloroform), dibromochloromethane (chlorodibromomethane), bromodichloromethane, and tribromomethane (bromoform)	0.1 mg/L
Fecal coliform bacteria	less than 2.2 organisms per 100 mL (MPN)
Radium 226 and radium 228	5 picocuries per liter
Gross alpha, excluding uranium	15 picocuries per liter
Uranium	0.02 mg/L
Trichloroethylene	0.005 mg/L
Carbon tetrachloride	0.005 mg/L
Vinyl chloride	0.002 mg/L
1,2-Dichloroethane	0.005 mg/L
Benzene	0.005 mg/L
1,1-Dichloroethylene	0.007 mg/L
1,1,1-Trichloroethane	0.200 mg/L
para-Dichlorobenzene	0.075 mg/L
Total hydrocarbons	10* mg/L
Polychlorinated biphenals (PCBs)	0.00005 mg/L
Xylene	10 mg/L

* Where Total Petroleum Hydrocarbons is less than or equal to the standard in this section and greater than 0.1 mg/L, and is within the radius of influence of a well or within a delineated wellhead protection area, clean up must continue until 0.1 mg/L is met unless a water quality variance can be obtained in accordance with § 74:54:02:03 for an accidental

spill or leak if it has been shown by either practice or study that all reasonable other alternatives for groundwater clean-up will not result in further removal of contaminant concentrations from the groundwater. Total petroleum hydrocarbons must be analyzed using the California/United States Geological Survey Method published in "Draft Method for Total Petroleum Hydrocarbons and Total Organic Lead," February 1988, or its equivalent.

TABLE TWO

Other standards that are not applicable to groundwater receiving discharge from publicly owned treatment works.

Contaminant	**Level**
Chloride	250 mg/L
PH	6.5-8.5
Sulfate	500 mg/L
TDS	1000 mg/L

If the standards in either table one or table two are exceeded by ambient groundwater quality, the ambient water quality becomes the maximum allowable limit, as determined in § 74:54:02:18, for an approved groundwater discharge plan unless that exceedance results from a discharge from a publicly owned treatment work.

Source:

14 SDR 86, effective December 24, 1987; 18 SDR 128, effective February 11, 1992; transferred from § 74:03:15:03, July 1, 1996.

General Authority:

SDCL 34A-2-11.

Law Implemented:

SDCL 34A-2-10, 34A-2-11.

References:

EPA Methods, Methods for Chemical Analysis of Water and Wastes, 1983, Stock Number EPA-600/4-79-020, 550 pages, published by the U.S. Environmental Protection Agency. Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The cost is $3.

"Draft Method for Total Petroleum Hydrocarbons and Total Organic Lead," February 1988, Hazardous Materials Laboratory, California Department of Health Services, 2151 Berkeley Way, Berkeley, California 90704, 405-540-3003.

Cross-References:

Organic chemicals, § 74:04:05:06.

Radionuclides, § 74:04:05:17.

40 C.F.R. §§ 141.11, 141.12, and 141.14 to 141.16, inclusive (July 1, 1991).

40 C.F.R. § 141.24 (July 1, 1991).

40 C.F.R. § 141.61 (July 1, 1991).

40 C.F.R. § 143.3 (July 1, 1991).

74:54:01:05. Potential toxic pollutants

Groundwater shall not contain potential toxic pollutants. Potential toxic pollutants include those listed in Table Three in this section. The following pollutants must be nondetectable in groundwater at detection limits of the currently acceptable sampling and analytical techniques as approved by the secretary in § 74:54:01:06 until a maximum contaminant level (MCL) is set by the EPA.

TABLE THREE

Potential Toxic Pollutants

Acetone
Acrylamide
Adipates
Bromobenzene
Bromomethane
Butyle acetate
Chloramben
Chlorobenzene
Chloroethane
Chloromethane
o –Chlorotoluence
p-Chlorotolune
Dalapon
DCPA
Dibromomethane
Dicamba
m-Dichlorobenzene
1,1-Dichloroethane
Dichloromethane
1,3-Dichloropropane
2,2-Dichloropropane
1,1-Dichloropropene
1,3-Dichloropropene
Dinoseb
Diquat
Endothall
Epichlorohydrin
Fonofos
Glyphosate
Hexachlorocyclopentdiene
Metolachlor
Methyl ethyl ketone
Methylene chloride
Metribuzin
Napthalene
PAH's (Polynuclear aromatic hydrocarbons)
Parathion
Phenol
Phthalates
Phorate
Pichloram
Simazine
2,3,7,8-TCDD (Dioxin)
Trichlorobenzene
1,1,2-Trichloroethane
1,2,3-Trichloropropane
Trifluralin
1,1,1,2-Tetrachloroethane
1,1,2,2,2-Tetrachloroethane

Source:

14 SDR 86, effective December 24, 1987; 18 SDR 128, effective February 11, 1992; transferred from § 74:03:15:04, July 1, 1996.

General Authority:

SDCL 34A-2-11.

Law Implemented:

SDCL 34A-2-10, 34A-2-11.

74:54:01:06. Sampling and analytical techniques

Sampling and analytical techniques and quality assurance plans must conform with the following references unless otherwise specified by the secretary:

(1) **Standard Methods for the Examination of Water and Wastewater**, sixteenth edition, 1985;

(2) **E.P.A. Methods, Methods for Chemical Analysis of Water and Wastes**, 1983;

(3) **Techniques of Water Resource Investigation of the U.S. Geological Survey**, (1982);

(4) The methods for monitoring published in 56 Fed. Reg. 3,578-3,597 (January 30, 1991) and 56 Fed. Reg. 30,266-30,281 (July 1, 1991) (both references to be codified at 40 C.F.R. Parts 141 and 142, National Primary Drinking Water Regulations) and 52 Fed. Reg. 25,942-25,953 (July 9, 1987) (to be codified at 40 C.F.R. Parts 264, including Appendix IX, and 270);

(5) **National Handbook of Recommended Methods for Water-Data Acquisition**, GSA-GS edition;

(6) **Manual of Analytical Methods for the Analysis of Pesticide in Humans and Environmental Samples**, 1980.

Source:

14 SDR 86, effective December 24, 1987; 18 SDR 128, effective February 11, 1992; transferred from § 74:03:15:05, July 1, 1996.

General Authority:

SDCL 34A-2-93.

Law Implemented:

SDCL 34A-2-10, 34A-2-11.

References:

Standard Methods for the Examination of Water and Wastewater, sixteenth edition, 1985, Library of Congress catalogue number: 55-1979, ISBN:0-87553-131-8, 1268 pages, is prepared and published jointly by the American Public Health Association and the Water Pollution Control Federation. Copies may be obtained from the publication office: American Public Health Association, American Water Works Association, 1015 Fifteenth Street N.W., Washington, D.C. 20005. The cost is $125.

E.P.A. Methods, Methods for Chemical Analysis of Water and Wastes, 1983, Stock Number EPA-600/4-79-020, 550 pages, is published by the U.S. Environmental Protection Agency. Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9325. The cost is $3.

Techniques of Water Resource Investigation of the U.S. Geological Survey, (1982), Book 5, Chapter A3. Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9325. The cost is $3.75.

National Handbook of Recommended Methods for Water-Data Acquisition, 1983, GSA-GS edition, book 85 AD-2777, Task 6800-035 Stock Number 024-001-03489-1. Published by the Office of Ground Water Protection. Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9325. The cost is $13.

Manual of Analytical Methods for the Analysis of Pesticide in Humans and Environmental Samples, 1980, Stock Number EPA-600/8-80-038, U.S. Environmental Protection Agency. Copies are available from National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161. The cost is $42.95, (microfiche $6.50).