WAC 173-200-040 Criteria. (1) Groundwaters in the state of Washington support many different beneficial uses. The purpose of these criteria is to establish maximum contaminant concentrations for the protection of a variety of beneficial uses of Washington's groundwater.

(a) Drinking water is the beneficial use generally requiring the highest quality of groundwater.

(b) Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

(c) Some groundwaters of the state support environmental systems with existing and future beneficial uses requiring more stringent protection than that provided by human health based criteria. These groundwaters and dependent uses will be protected by either or both of the following:

(i) Designation of an area and its associated groundwater as a special protection area in accordance with WAC 173-200-090.

(ii) Establishment of enforcement limits as close to the natural groundwater quality as possible for activities that may adversely affect those groundwaters in accordance with WAC 173-200-050.

(d) The use of criteria based on drinking water quality shall in no way be interpreted to mean that all groundwaters are used for drinking water or that all groundwaters are presently suitable for drinking water.

(2) The following criteria shall apply to all groundwaters in the state of Washington:

(a) Groundwater concentrations shall not exceed the criteria listed in Table 1, except as described in WAC 173-200-050 (3)(b).

(b) For the primary and secondary contaminants and radionuclides listed in Table 1, the criteria shall be the most stringent concentration of the following and those listed in Table 1:

(i) Maximum contaminant level goals;

(ii) Maximum contaminant levels; and

(iii) State maximum contaminant levels published in chapter 248-54 WAC as presently promulgated or subsequently amended or repromulgated.

The criteria for primary and secondary contaminants and radionuclide contaminants in Table 1 shall be amended as the federal and state rules are amended and without amendment of this chapter.

(c) For carcinogens listed in Table 1, the criteria are the concentrations that are anticipated to result in a total incremental human cancer risk of less than 1 in 1,000,000, and were estimated using the following equation and standard exposure assumptions:

$$\text{Groundwater Criteria (ug/l)} = \frac{\text{RISK x BW x LIFE x UCF}}{\text{CPF x DWIR x DUR}}$$

Where:

RISK	=	Human cancer risk level (1 in 1,000,000)
BW	=	Body Weight (70 kg)
LIFE	=	Lifetime (70 years)
UCF	=	Unit conversion factor (1,000 ug/mg)
CPF	=	Cancer potency factor as published in the IRIS database (1/mg/kg/day)
DWIR	=	Drinking water ingestion rate (2.0 liters/day)
DUR	=	Duration of exposure (30 years)

For volatile carcinogens, inhalation exposure from showering was incorporated into the criteria by doubling the drinking water ingestion rate.

(3) For contaminants for which no numeric criteria have been established, enforcement limits shall be established in accordance with WAC 173-200-050.

TABLE 1
GROUNDWATER QUALITY CRITERIA

CONTAMINANT	CRITERION	
I. PRIMARY AND SECONDARY CONTAMINANTS AND RADIONUCLIDES		
A. PRIMARY CONTAMINANTS		
Barium*	1.0	milligrams/liter (mg/1)
Cadmium*	0.01	mg/1
Chromium*	0.05	mg/1
Lead*	0.05	mg/1
Mercury*	0.002	mg/1
Selenium*	0.01	mg/1
Silver*	0.05	mg/1
Fluoride	4	mg/1
Nitrate (as N)	10	mg/1
Endrin	0.0002	mg/1
Methoxychlor	0.1	mg/1
1,1,1-Trichloroethane	0.20	mg/1
2-4 D	0.10	mg/1
2,4,5-TP Silvex	0.01	mg/1
Total Coliform Bacteria	1/100	ml
B. SECONDARY CONTAMINANTS		
Copper*	1.0	mg/1
Iron*	0.30	mg/1
Manganese*	0.05	mg/1
Zinc*	5.0	mg/1
Chloride	250	mg/1
Sulfate	250	mg/1
Total Dissolved Solids	500	mg/1
Foaming Agents	0.5	mg/1
pH	6.5-8.5	
Corrosivity	noncorrosive	
Color	15 color units	
Odor	3 threshold odor units	
C. RADIONUCLIDES		
Gross Alpha Particle Activity	15	pico Curie/liter (pCi/1)
Gross Beta Particle Radioactivity		pCi/l
Gross Beta Activity	50	pCi/l
Tritium	20,000	pCi/l
Strontium-90	8	
Radium 226 & 228	5	pCi/1
Radium -226	3	pCi/1
II. CARCINOGENS		
Acrylamide	0.02	micrograms/liter ug/l

CONTAMINANT	CRITERION	
Acrylonitrile	0.07	ug/1
Aldrin	0.005	ug/1
Aniline	14	ug/1
Aramite	3	ug/1
Arsenic*	0.05	(ug/1)
Azobenzene	0.7	ug/1
Benzene	1.0	ug/1
Benzidine	0.0004	ug/1
Benzo(a)pyrene	0.008	ug/1
Benzotrichloride	0.007	ug/1
Benzyl chloride	0.5	ug/1
Bis(chloroethyl)ether	0.07	ug/1
Bis(chloromethyl)ether	0.0004	ug/1
Bis(2-ethylhexyl) phthalate	6.0	ug/1
Bromodichloromethane	0.3	ug/1
Bromoform	5	ug/1
Carbazole	5	ug/1
Carbon tetrachloride	0.3	ug/1
Chlordane	0.06	ug/1
Chlorodibromomethane	0.5	ug/1
Chloroform	7.0	ug/1
4 Chloro-2-methyl aniline	0.1	ug/1
4 Chloro-2-methyl analine hydrochloride	0.2	ug/1
o-Chloronitrobenzene	3	ug/1
p-Chloronitrobenzene	5	ug/1
Chlorthalonil	30	ug/1
Diallate	1	ug/1
DDT (includes DDE and DDD)	0.3	ug/1
1,2 Dibromoethane	0.001	ug/1
1,4 Dichlorobenzene	4	ug/1
3,3' Dichlorobenzidine	0.2	ug/1
1,1 Dichloroethane	1.0	ug/1
1,2 Dichloroethane (ethylene chloride)	0.5	ug/1
1,2 Dichloropropane	0.6	ug/1
1,3 Dichloropropene	0.2	ug/1
Dichlorvos	0.3	ug/1
Dieldrin	0.005	ug/1
3,3' Dimethoxybenzidine	6	ug/1
3,3 Dimethylbenzidine	0.007	
1,2 Dimethylhydrazine	60	ug/1
2,4 Dinitrotoluene	0.1	ug/1
2,6 Dinitrotoluene	0.1	ug/1
1,4 Dioxane	7.0	ug/1
1,2 Diphenylhydrazine	0.09	ug/1
Direct Black 38	0.009	ug/1
Direct Blue 6	0.009	ug/1
Direct Brown 95	0.009	ug/1
Epichlorohydrin	8	ug/1
Ethyl acrylate	2	ug/1
Ethylene dibromide	0.001	ug/1
Ethylene thiourea	2	ug/1
Folpet	20	ug/1
Furazolidone	0.02	ug/1

CONTAMINANT	CRITERION	
Furium	0.002	ug/1
Furmecyclox	3	ug/1
Heptachlor	0.02	ug/1
Heptachlor Epoxide	0.009	ug/1
Hexachlorobenzene	0.05	ug/1
Hexachlorocyclohexane (alpha)	0.001	ug/1
Hexachlorocyclohexane (technical)	0.05	ug/1
Hexachlorodibenzo-p-dioxin, mix	0.00001	ug/1
Hydrazine/Hydrazine sulfate	0.03	ug/1
Lindane	0.06	ug/1
2 Methoxy-5-nitroaniline	2	ug/1
2 Methylaniline	0.2	ug/1
2 Methylaniline hydrochloride	0.5	ug/1
4,4' Methylene bis(N,N'-dimethyl) aniline	2	ug/1
Methylene chloride (dichloromethane)	5	ug/1
Mirex	0.05	ug/1
Nitrofurazone	0.06	ug/1
N-Nitrosodiethanolamine	0.03	ug/1
N-Nitrosodiethylamine	0.0005	ug/1
N-Nitrosodimethylamine	0.002	ug/1
N-Nitrosodiphenylamine	17	ug/1
N-Nitroso-di-n-propylamine	0.01	ug/1
N-Nitrosopyrrolidine	0.04	ug/1
N-Nitroso-di-n-butylamine	0.02	ug/1
N-Nitroso-N-methylethylamine	0.004	ug/1
PAH	0.01	ug/1
PBBs	0.01	ug/1
PCBs	0.01	ug/1
o-Phenylenediamine	0.005	ug/1
Propylene oxide	0.01	ug/1
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.0000006	ug/1
Tetrachloroethylene (perchloroethylene)	0.8	ug/1
p,α,α,α-Tetrachlorotoluene	0.004	ug/1
2,4 Toluenediamine	0.002	ug/1
o-Toluidine	0.2	ug/1
Toxaphene	0.08	ug/1
Trichloroethylene	3	ug/1
2,4,6-Trichlorophenol	4	ug/1
Trimethyl phosphate	2	ug/1
Vinyl chloride	0.02	ug/1

*metals are measured as total metals

[Statutory Authority: RCW 90.48.035. WSR 90-22-023, § 173-200-040, filed 10/31/90, effective 12/1/90.]