

**DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION**



**18 AAC 75**

**Oil and Other Hazardous Substances  
Pollution Control**

**Public Comment Draft**

**May 18, 2016**

**Comment Period Ends  
June 23, 2016, 5:00 p.m.**

**Bill Walker  
Governor**

**Larry Hartig  
Commissioner**

18 AAC 75.325(g) is amended to read:

(g) If using method two or method three for determining the applicable soil cleanup levels as described in 18 AAC 75.340 and 18 AAC 75.341, or if applying the groundwater cleanup levels at Table C in 18 AAC 75.345, a responsible person shall ensure that, after completing site cleanup, the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one, reported to one significant figure, across all exposure pathways. **Instructions for determining** [GUIDANCE ON] cumulative risk **are** [DETERMINATIONS IS] provided in the department's **Procedures for Calculating Cumulative Risk, dated May 15, 2016**[CUMULATIVE RISK GUIDANCE, JUNE 9, 2008]. The department's **Procedures for Calculating Cumulative Risk, dated May 15, 2016**[CUMULATIVE RISK GUIDANCE, JUNE 9, 2008] is adopted by reference.

18 AAC 75.325(h) is amended to read:

(h) If proposing an alternative cleanup level for soil or groundwater, based on a site-specific risk assessment under method four in 18 AAC 75.340(f) or under the provisions of 18 AAC 75.345(b)(2), a responsible person shall ensure that the risk from hazardous substances does not exceed the cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed the cumulative noncarcinogenic risk standard at a hazard index of one, reported to one significant figure, across all exposure pathways. Guidance on cumulative risk determinations is provided in the department's **Procedures for Calculating Cumulative Risk** [CUMULATIVE RISK GUIDANCE], adopted in (g) of this section. (Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; am 1/30/2003, Register 165; am 10/9/2008, Register 188; am \_\_/\_\_/\_\_\_\_, Register \_\_)

<b>Authority:</b>	AS 46.03.020	AS 46.03.740	AS 46.04.020
	AS 46.03.050	AS 46.03.745	AS 46.04.070
	AS 46.03.710	AS 46.03.822	AS 46.09.020

**Editor's note:** The department's *Procedures for Calculating Cumulative Risk*

[CUMULATIVE RISK GUIDANCE], adopted by reference in 18 AAC 75.325 may be viewed at or obtained from the department's offices in Anchorage, Fairbanks, Juneau, and Soldotna or the department's Internet website at [http://dec.alaska.gov/spar/csp/guidance\\_forms/csguidance.htm](http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm).

...

The introductory language of 18 AAC 75.340(a) is amended to read:

(a) This section provides the requirements for cleanup levels for hazardous substances in soil. For each site, except as provided in (b) of this section, a responsible person shall propose soil cleanup levels for approval, shall base those cleanup levels upon an estimate of the reasonable maximum exposure expected to occur **through one or more pathways that include the Table B1 human health or migration to groundwater pathways, and the Table B2 ingestion, inhalation, or migration to groundwater pathways** under current and future site conditions, and shall develop those cleanup levels using one or more of the following methods:

...

18 AAC 75.340(d) is amended to read:

(d) The soil cleanup levels provided under method one and method two apply at a contaminated site unless the department approves an alternative cleanup level that the responsible person has proposed under method three or method four. To obtain approval for an alternative cleanup level, a responsible person must demonstrate that an alternative cleanup level

proposed under method three or method four is protective of human health, safety, and welfare, and of the environment, and must demonstrate compliance with the applicable institutional control requirements under 18 AAC 75.375. **The cleanup level that applies at a site is the most stringent of either the site-specific calculated level or, for a pathway where no site-specific value was calculated, the listed value for a hazardous substance in Table B1 of 18 AAC 75.341(c) or Table B2 of 18 AAC 75.341(d).**

...

18 AAC 75.340(e) is amended to read:

(e) Under method three, a responsible person may propose **for the department's approval or the department may set** a site-specific alternative cleanup level **for a hazardous substance listed in Table B1 of 18 AAC 75.341(c) or Table B2 of 18 AAC 75.341(d)** that modifies

(1) the **levels for the** migration to groundwater or **human health pathways** [INHALATION LEVELS] in Table B1[OF 18 AAC 75.341(c)] or **the levels for the migration to groundwater or inhalation pathways in** Table B2 [OF 18 AAC 75.341(D)], based on the use of approved site-specific soil data, and the equations set out in the department's **Procedures for Calculating Cleanup Levels dated May 15, 2016**[CLEANUP LEVELS GUIDANCE, JUNE 9, 2008] adopted by reference; [THE ALTERNATIVE CLEANUP LEVEL THAT THEN APPLIES AT THE SITE FOR A HAZARDOUS SUBSTANCE IS THE MOST STRINGENT OF THE TABLE B1 DIRECT CONTACT OR TABLE B2 INGESTION LEVEL AND THE SITE-SPECIFIC CALCULATED LEVELS FOR INHALATION OR MIGRATION TO GROUNDWATER;]

(2) the **levels for the** migration to groundwater **pathway**[LEVELS] in Table B1

or Table B2, based on approved site-specific soil **and groundwater** data, and an approved fate and transport model that demonstrates that alternative soil cleanup levels are protective of the applicable groundwater cleanup levels under 18 AAC 75.345; [IF THE ALTERNATIVE MIGRATION TO GROUNDWATER CLEANUP LEVEL DOES NOT EXCEED

(A) THE DIRECT CONTACT LEVEL IN TABLE B1 OR THE INGESTION LEVEL IN TABLE B2;

(B) THE INHALATION LEVEL IN TABLE B1 OR TABLE B2; OR

(C) A SITE-SPECIFIC INHALATION LEVEL CALCULATED UNDER (1) OF THIS SUBSECTION; THE LEVEL THAT APPLIES AT THE SITE IS THE MOST STRINGENT LEVEL; ] or

(3) the **level for the human health pathway** [DIRECT CONTACT OR THE INHALATION LEVEL] in Table B1 or the **levels for** ingestion [LEVEL] or [THE] inhalation **pathways** [LEVEL] in Table B2 based on use of commercial or industrial exposure parameters listed in Appendix B of the **Procedures for Calculating Cleanup Levels** [CLEANUP LEVELS GUIDANCE] adopted by reference in (1) of this subsection, if the department determines that the site serves a commercial or industrial land use [AND IF THE ALTERNATIVE DIRECT CONTACT LEVEL OR INHALATION LEVEL DOES NOT EXCEED THE MIGRATION TO GROUNDWATER CLEANUP LEVEL IN TABLE B1, THE ALTERNATIVE INGESTION LEVEL OR INHALATION LEVEL DOES NOT EXCEED THE MIGRATION TO GROUNDWATER CLEANUP LEVEL IN TABLE B2 OR THE ALTERNATIVE LEVEL DOES NOT EXCEED A SITE-SPECIFIC MIGRATION TO GROUNDWATER LEVEL CALCULATED UNDER (2) OF THIS SUBSECTION]; the department will base a land use determination under this paragraph upon

- (A) consultation with the public, including the local zoning authority, if any;
- (B) a determination that the site does not serve a residential land use;
- (C) a determination that the site will not serve a future residential land use based on consideration of the factors in EPA's Land Use in the CERCLA Remedy Selection Process, OSWER Dir. No. 9355.7-04, dated May 25, 1995, adopted by reference; land in an undeveloped area for which it would be difficult to determine a future use pattern is capable of being a residential area, unless demonstrated otherwise; and
- (D) consent of each landowner who is affected by the contamination at the site that a cleanup level less stringent than a cleanup level appropriate to residential land use is appropriate for the site.

...

18 AAC 75.340(f)(2) is amended to read:

(2) obtains the consent of each landowner who is affected by the contamination at the site that a cleanup level less stringent than a cleanup level appropriate to residential land use is appropriate for the site.

18 AAC 75.340(g) is amended to read:

(g) The department will develop a site-specific cleanup level for a hazardous substance not listed under 18 AAC 75.341(c) using the **procedures** [EQUATIONS] set out in the department's ***Risk Assessment Procedures Manual*** [CLEANUP LEVELS GUIDANCE], adopted by reference in **18 AAC 75.340(f)(1)**[18 AAC 75.340(e)(1)] of this section, unless the responsible person demonstrates that a site-specific cleanup level is not necessary to ensure

protection of human health, safety, and welfare, and of the environment.

. . .

18 AAC 75.340(i)(2) is repealed and readopted to read:

(2) a site-specific analysis is necessary due to

- (A) exposure pathways such as the potential for the accumulation of vapors in buildings or other structures at levels that threaten human health;
- (B) sediment contamination;
- (C) impacts to ecological receptors;
- (D) other site uses such as recreational, agricultural, or subsistence use; or
- (E) the presence of sensitive subpopulations who respond biologically to lower levels of exposure to a hazardous substance.

. . .

18 AAC 75.340(j)(2) is amended to read:

(2) human exposure from ingestion, **dermal** [DIRECT CONTACT] or inhalation of **particulates or** a volatile hazardous substance must be attained in the surface soil and the subsurface soil to a depth of [AT LEAST] 15 feet, unless an institutional control or site conditions prevent human exposure to the subsurface soil; and

(Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; am 1/30/2003, Register 165; am 10/9/2008, Register 188; am \_\_/\_\_/\_\_\_\_, Register \_\_\_\_)

**Authority:** AS 46.03.020 AS 46.03.740 AS 46.04.070  
AS 46.03.050 AS 46.03.745 AS 46.09.020  
AS 46.03.710 AS 46.04.020

**Editor's note:** The documents adopted by reference in 18 AAC 75.340 may be reviewed at, or requested from, the department's offices in Anchorage, Fairbanks, Juneau, and Soldotna.

**The documents adopted by reference may also be viewed through the department's Internet website at [http://dec.alaska.gov/spar/csp/guidance\\_forms/csguidance.htm](http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm).**

...

The introductory language of 18 AAC 75.341(a) is amended to read:

(a) If a responsible person uses method one **for petroleum hydrocarbons** for a non-Arctic zone under 18 AAC 75.340, the soil cleanup levels must be based on Table A1 in this subsection.

...

The introductory language of 18 AAC 75.341(b) is amended to read:

(b) If a responsible person uses method one **for petroleum hydrocarbons** for an Arctic zone under 18 AAC 75.340, the soil cleanup levels must be based on Table A2 in this subsection.

...

18 AAC 75.341(c) is repealed and readopted to read:

(c) If a responsible person uses method two for chemicals other than petroleum hydrocarbons under 18 AAC 75.340, the soil cleanup levels must be based on Table B1 in this subsection.

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(c); noncarcinogen(nc); mutagen(m)	Arctic Zone <sup>2</sup>	Under 40 Inch Zone <sup>3</sup>	Over 40 Inch Zone <sup>4</sup>	Migration to Groundwater <sup>6</sup> (mg/kg)
			Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	
Acenaphthene <sup>7</sup>	83-32-9	nc	6300	4600	3800	37
Acenaphthylene <sup>7,8</sup>	208-96-8	nc	3100	2300	1900	18
Acetone	67-64-1	nc	1.0 x 10 <sup>5,9</sup>	81000	66000	38
Aldrin	309-00-2	ca	0.67	0.49	0.40	0.0099
Ammonium Perchlorate	7790-98-9	nc	96	71	58	0.037
Anthracene <sup>7</sup>	120-12-7	nc	31000	23000	19000	390
Antimony (metallic)	7440-36-0	nc	55	41	33	4.6
Arsenic, Inorganic <sup>11</sup>	7440-38-2	ca	12	8.8	7.2	0.20
Barium	7440-39-3	nc	27000	20000	16000	2100
Benz[a]anthracene <sup>7</sup>	56-55-3	m	2.7	2.0	1.7	0.28
Benzaldehyde	100-52-7	nc	770 <sup>10</sup>	770 <sup>10</sup>	770 <sup>10</sup>	5.4
Benzene <sup>7</sup>	71-43-2	ca	16	11	8.7	0.022
Benzo[a]pyrene <sup>7</sup>	50-32-8	m	0.28	0.20	0.17	0.27
Benzo[b]fluoranthene <sup>7</sup>	205-99-2	m	2.8	2.0	1.7	2.7
Benzo[g,h,i]perylene <sup>7,8</sup>	191-24-2	nc	3100	2300	1900	15000
Benzo[k]fluoranthene <sup>7</sup>	207-08-9	m	28	20	17	27
Benzoic Acid	65-85-0	nc	4.4 x 10 <sup>5,9</sup>	3.3 x 10 <sup>5,9</sup>	2.7 x 10 <sup>5,9</sup>	210
Benzyl Alcohol	100-51-6	nc	11000	8200	6700	5.7
Beryllium and compounds	7440-41-7	nc	270	200	160	260
Bis(2-chloroethyl)ether	111-44-4	ca	4.0	2.8	2.2	0.00042
Bis(2-ethylhexyl)phthalate	117-81-7	ca	680	500	410	88
Bromobenzene	108-86-1	nc	160 <sup>10</sup>	160 <sup>10</sup>	160 <sup>10</sup>	0.36
Bromodichloromethane	75-27-4	ca	5.3	3.6	2.8	0.0042
Bromoform	75-25-2	ca	340	240	190	0.10
Bromomethane	74-83-9	nc	15	10	7.9	0.024
Butadiene, 1,3-	106-99-0	ca	1.2	0.86	0.68	0.0012

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(c); noncarcinogen(nc); mutagen(m)	Arctic Zone <sup>2</sup>	Under 40 Inch Zone <sup>3</sup>	Over 40 Inch Zone <sup>4</sup>	Migration to Groundwater <sup>6</sup> (mg/kg)
			Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	
Butanol, N-	71-36-3	nc	6500 <sup>10</sup>	6500 <sup>10</sup>	6500 <sup>10</sup>	5.3
Butyl Benzyl Phthalate	85-68-7	ca	5000	3700	3000	15
Butylbenzene, n-	104-51-8	nc	20 <sup>10</sup>	20 <sup>10</sup>	20 <sup>10</sup>	23
Butylbenzene, sec-	135-98-8	nc	28 <sup>10</sup>	28 <sup>10</sup>	28 <sup>10</sup>	42
Butylbenzene, tert-	98-06-6	nc	35 <sup>10</sup>	35 <sup>10</sup>	35 <sup>10</sup>	11
Cadmium (Diet)	7440-43-9	nc	120	92	75	9.1
Carbon Disulfide	75-15-0	nc	500 <sup>10</sup>	500 <sup>10</sup>	500 <sup>10</sup>	2.9
Carbon Tetrachloride	56-23-5	ca	13	9.1	7.1	0.021
Chlordane	12789-03-6	ca	28	21	17	0.20
Chlordecone (Kepone)	143-50-0	ca	0.95	0.70	0.58	0.0081
Chloroaniline, p-	106-47-8	ca	47	35	29	0.015
Chlorobenzene	108-90-7	nc	180 <sup>10</sup>	180 <sup>10</sup>	180 <sup>10</sup>	0.46
Chloroform	67-66-3	ca	5.8	4.0	3.1	0.0071
Chloromethane	74-87-3	nc	250	170	130	0.61
Chloronaphthalene, Beta-	91-58-7	nc	8400	6200	5100	26
Chlorophenol, 2-	95-57-8	nc	680	510	410	0.61
Chromium(III), Insoluble Salts <sup>12</sup>	16065-83-1	nc	2.1 x 10 <sup>5,9</sup>	1.5 x 10 <sup>5,9</sup>	1.2 x 10 <sup>5,9</sup>	-
Chromium(VI) <sup>12</sup>	18540-29-9	m	5.3	3.9	3.2	0.088
Chrysene <sup>7</sup>	218-01-9	m	280	200	170	82
Copper	7440-50-8	nc	5500	4100	3300	370
Cresol, m-	108-39-4	nc	5500	4100	3400	6.1
Cresol, o-	95-48-7	nc	5500	4100	3400	6.2
Cresol, p-	106-44-5	nc	11000	8200	6700	12
Cumene	98-82-8	nc	54 <sup>10</sup>	54 <sup>10</sup>	54 <sup>10</sup>	5.6
Cyanide (CN-) <sup>913</sup>	57-12-5	nc	7.0	4.8	3.7	0.20
Cyclohexane	110-82-7	nc	77 <sup>10</sup>	77 <sup>10</sup>	77 <sup>10</sup>	150
DDD	72-54-8	ca	40	29	24	0.47
DDE, p,p'-	72-55-9	ca	34	25	20	0.72

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			Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	
DDT	50-29-3	ca	33	24	20	5.1
Dibenz[a,h]anthracene <sup>7</sup>	53-70-3	m	0.28	0.20	0.17	0.87
Dibenzofuran	132-64-9	nc	130	95	77	0.97
Dibromochloromethane	124-48-1	ca	13	9.2	7.1	0.0052
Dibromoethane, 1,2- (Ethylene Dibromide)	106-93-4	ca	0.62	0.42	0.33	0.00024
Dibromomethane (Methylene Bromide)	74-95-3	nc	44	30	23	0.024
Dibutyl Phthalate	84-74-2	nc	11000	8200	6700	16
Dichlorobenzene, 1,2-	95-50-1	nc	78 <sup>10</sup>	78 <sup>10</sup>	78 <sup>10</sup>	2.4
Dichlorobenzene, 1,3- <sup>8</sup>	541-73-1	nc	62 <sup>10</sup>	62 <sup>10</sup>	62 <sup>10</sup>	2.3
Dichlorobenzene, 1,4-	106-46-7	ca	31	21	17	0.037
Dichlorobenzidine, 3,3'-	91-94-1	ca	21	16	13	0.055
Dichlorodifluoromethane	75-71-8	nc	220	150	120	3.9
Dichloroethane, 1,1-	75-34-3	ca	67	46	35	0.092
Dichloroethane, 1,2-	107-06-2	ca	7.9	5.5	4.2	0.0055
Dichloroethylene, 1,1-	75-35-4	nc	480	330	260	1.2
Dichloroethylene, 1,2-cis-	156-59-2	nc	270	200	170	0.12
Dichloroethylene, 1,2-trans-	156-60-5	nc	960 <sup>10</sup>	960 <sup>10</sup>	960 <sup>10</sup>	1.3
Dichlorophenol, 2,4-	120-83-2	nc	330	250	200	0.42
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	nc	1200	910	740	0.53
Dichloropropane, 1,2-	78-87-5	ca	16	11	8.6	0.016
Dichloropropene, 1,3-	542-75-6	ca	29	21	16	0.018
Dieldrin	60-57-1	ca	0.59	0.44	0.36	0.0046
Diethyl Phthalate	84-66-2	nc	88000	66000	54000	60
Dimethylphenol, 2,4-	105-67-9	nc	2200	1600	1300	3.2
Dimethylphthalate <sup>8</sup>	131-11-3	nc	88000	66000	54000	48
Dinitrobenzene, 1,2-	528-29-0	nc	11	8.2	6.7	0.014
Dinitrobenzene, 1,3-	99-65-0	nc	11	8.2	6.7	0.014
Dinitrobenzene, 1,4-	100-25-4	nc	11	8.2	6.7	0.014

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(c); noncarcinogen(nc); mutagen(m)	Arctic Zone <sup>2</sup>	Under 40 Inch Zone <sup>3</sup>	Over 40 Inch Zone <sup>4</sup>	Migration to Groundwater <sup>6</sup> (mg/kg)
			Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	
Dinitrophenol, 2,4-	51-28-5	nc	220	160	130	0.34
Dinitrotoluene, 2,4-	121-14-2	ca	30	23	18	0.024
Dinitrotoluene, 2,6-	606-20-2	ca	6.3	4.7	3.8	0.0050
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	nc	270	200	160	0.25
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	nc	270	200	160	0.25
Dioxane, 1,4-	123-91-1	ca	100	73	59	0.012
Diphenylamine	122-39-4	nc	2800	2000	1700	4.2
Endosulfan	115-29-7	nc	820	610	500	9.3
Endrin	72-20-8	nc	33	25	20	0.61
Ethyl Chloride	75-00-3	nc	1400 <sup>10</sup>	1400 <sup>10</sup>	1400 <sup>10</sup>	72
Ethylbenzene <sup>7</sup>	100-41-4	ca	72	49	38	0.13
Ethylene Glycol	107-21-1	nc	2.2 x 10 <sup>5,9</sup>	1.6 x 10 <sup>5,9</sup>	1.3 x 10 <sup>5,9</sup>	110
Fluoranthene <sup>7</sup>	206-44-0	nc	4200	3100	2500	590
Fluorene <sup>7</sup>	86-73-7	nc	4200	3100	2500	36
Formaldehyde	50-00-0	nc	430	290	230	0.011
Heptachlor	76-44-8	ca	2.2	1.6	1.3	0.0074
Heptachlor Epoxide	1024-57-3	ca	1.2	0.86	0.70	0.0019
Hexachlorobenzene	118-74-1	ca	2.8	2.0	1.6	0.0082
Hexachlorobutadiene	87-68-3	nc	3.3 <sup>10</sup>	3.3 <sup>10</sup>	3.3 <sup>10</sup>	0.020
Hexachlorocyclohexane, Alpha-	319-84-6	ca	1.5	1.1	0.91	0.0028
Hexachlorocyclohexane, Beta-	319-85-7	ca	5.3	3.9	3.2	0.0099
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	ca	9.9	7.4	6.0	0.016
Hexachlorocyclopentadiene	77-47-4	nc	2.0	1.4	1.1	0.0092
Hexachloroethane	67-72-1	nc	24	17	13	0.018
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ca	110	79	64	0.027
Hexane, N-	110-54-3	nc	130 <sup>10</sup>	130 <sup>10</sup>	130 <sup>10</sup>	30
Hexanone, 2-	591-78-6	nc	380	270	210	0.11
Hydrazine	302-01-2	ca	0.79	0.55	0.43	3.1 x 10 <sup>-5</sup>

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(c); noncarcinogen(nc); mutagen(m)	Arctic Zone <sup>2</sup>	Under 40 Inch Zone <sup>3</sup>	Over 40 Inch Zone <sup>4</sup>	Migration to Groundwater <sup>6</sup> (mg/kg)
			Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	
Indeno[1,2,3-cd]pyrene <sup>7</sup>	193-39-5	m	2.8	2.0	1.7	8.8
Isophorone	78-59-1	ca	10000	7400	6100	2.7
Isopropanol	67-63-0	nc	14000	9500	7300	1.1
Lead and Compounds <sup>14</sup>	7439-92-1	nc	400	400	400	-
Mercuric Chloride <sup>8</sup>	7487-94-7	nc	41	30	25	3.9
Mercury (elemental)	7439-97-6	nc	3.1 <sup>10</sup>	3.1 <sup>10</sup>	3.1 <sup>10</sup>	0.36
Methanol	67-56-1	nc	1.0 x 10 <sup>5,9</sup>	1.0 x 10 <sup>5,9</sup>	1.0 x 10 <sup>5,9</sup>	54
Methoxychlor	72-43-5	nc	550	410	340	13
Methyl Ethyl Ketone (2-Butanone)	78-93-3	nc	23000 <sup>10</sup>	23000 <sup>10</sup>	23000 <sup>10</sup>	15
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	nc	2200 <sup>10</sup>	2200 <sup>10</sup>	2200 <sup>10</sup>	3.5
Methyl Mercury	22967-92-6	nc	14	10	8.3	71
Methyl tert-Butyl Ether (MTBE)	1634-04-4	ca	970	670	520	0.40
Methylene Chloride	75-09-2	nc	630	460	370	0.33
Methylnaphthalene, 1-	90-12-0	ca	310	230	190	0.40
Methylnaphthalene, 2-	91-57-6	nc	420	310	250	1.3
Naphthalene <sup>7</sup>	91-20-3	ca	42	29	22	0.038
Nickel Soluble Salts	7440-02-0	nc	2700	2000	1600	340
Nitrobenzene	98-95-3	ca	63	43	33	0.0079
Nitroglycerin	55-63-0	nc	11	8.2	6.7	0.0082
Nitroguanidine	556-88-7	nc	11000	8200	6700	5.8
Nitrosodimethylamine, N-	62-75-9	m	0.036	0.026	0.021	3.3 x 10 <sup>-6</sup>
Nitroso-di-N-propylamine, N-	621-64-7	ca	1.4	1.00	0.82	0.00068
Nitrosodiphenylamine, N-	86-30-6	ca	1900	1400	1200	4.5
Nitrotoluene, m-	99-08-1	nc	11	8.2	6.7	0.013
Nitrotoluene, o-	88-72-2	ca	55	41	34	0.024
Nitrotoluene, p-	99-99-0	nc	440	330	270	0.32
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	nc	6700	5000	4100	9.7
Octyl Phthalate, di-N-	117-84-0	nc	1100	820	670	370

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(c); noncarcinogen(nc); mutagen(m)	Arctic Zone <sup>2</sup>	Under 40 Inch Zone <sup>3</sup>	Over 40 Inch Zone <sup>4</sup>	Migration to Groundwater <sup>6</sup> (mg/kg)
			Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	
Pentachlorophenol	87-86-5	ca	18	13	11	0.027
Pentaerythritol tetranitrate (PETN)	78-11-5	nc	220	160	130	0.43
Perfluorooctane Sulphonic Acid (PFOS) <sup>8</sup>	1763-23-1	nc	0.88	0.66	0.54	0.00043
Perfluorooctanoic Acid (PFOA) <sup>8</sup>	335-67-1	nc	2.2	1.6	1.3	0.0011
Phenanthrene <sup>7,8</sup>	85-01-8	nc	3100	2300	1900	39
Phenol	108-95-2	nc	33000	25000	20000	29
Phosphorus, White	7723-14-0	nc	2.7	2.0	1.7	0.020
Polychlorinated Biphenyls (total) <sup>15</sup>	1336-36-3	ca	1.0	1.0	1.0	-
Propyl benzene	103-65-1	nc	52 <sup>10</sup>	52 <sup>10</sup>	52 <sup>10</sup>	9.1
Pyrene <sup>7</sup>	129-00-0	nc	3100	2300	1900	87
Selenium	7782-49-2	nc	680	510	410	6.9
Silver	7440-22-4	nc	680	510	410	11
Styrene	100-42-5	nc	180 <sup>10</sup>	180 <sup>10</sup>	180 <sup>10</sup>	10
TCDD, 2,3,7,8- <sup>16</sup>	1746-01-6	ca	8.2 x 10 <sup>-5</sup>	6.0 x 10 <sup>-5</sup>	4.9 x 10 <sup>-5</sup>	3.9 x 10 <sup>-6</sup>
Tetrachloroethane, 1,1,1,2-	630-20-6	ca	30	21	16	0.022
Tetrachloroethane, 1,1,2,2-	79-34-5	ca	8.8	6.1	4.8	0.0030
Tetrachloroethylene	127-18-4	nc	68 <sup>10</sup>	68 <sup>10</sup>	68 <sup>10</sup>	0.19
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	nc	270	200	170	2.5
Thallium (Soluble Salts)	7440-28-0	nc	1.4	1.00	0.83	0.19
Toluene <sup>7</sup>	108-88-3	nc	200 <sup>10</sup>	200 <sup>10</sup>	200 <sup>10</sup>	6.7
Toxaphene	8001-35-2	ca	8.6	6.4	5.2	0.16
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	nc	740 <sup>10</sup>	740 <sup>10</sup>	740 <sup>10</sup>	1700
Trichlorobenzene, 1,2,3-	87-61-6	nc	110	81	66	0.15
Trichlorobenzene, 1,2,4-	120-82-1	nc	65	45	35	0.082
Trichloroethane, 1,1,1-	71-55-6	Nc	360 <sup>10</sup>	360 <sup>10</sup>	360 <sup>10</sup>	32
Trichloroethane, 1,1,2-	79-00-5	nc	2.3	1.6	1.2	0.0014
Trichloroethylene	79-01-6	nc	7.1	4.9	3.8	0.011
Trichlorofluoromethane	75-69-4	nc	980 <sup>10</sup>	980 <sup>10</sup>	900	9.0

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(c); noncarcinogen(nc); mutagen(m)	Arctic Zone <sup>2</sup>	Under 40 Inch Zone <sup>3</sup>	Over 40 Inch Zone <sup>4</sup>	Migration to Groundwater <sup>6</sup> (mg/kg)
			Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	Human Health <sup>5</sup> (mg/kg)	
Trichlorophenol, 2,4,5-	95-95-4	nc	11000	8200	6700	31
Trichlorophenol, 2,4,6-	88-06-2	nc	110	82	67	0.31
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	nc	1100	820	670	0.66
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	nc	880	660	540	0.55
Trichloropropane, 1,2,3-	96-18-4	m	0.089	0.066	0.054	3.1 x 10 <sup>-5</sup>
Trimethylbenzene, 1,2,4-	95-63-6	nc	43 <sup>10</sup>	43 <sup>10</sup>	35	0.16
Trimethylbenzene, 1,3,5-	108-67-8	nc	37 <sup>10</sup>	37 <sup>10</sup>	37 <sup>10</sup>	1.3
Tri-n-butyltin	688-73-3	nc	41	30	25	0.68
Trinitrobenzene, 1,3,5-	99-35-4	nc	3900	2900	2400	15
Trinitrotoluene, 2,4,6-	118-96-7	nc	64	47	39	0.39
Vanadium and Compounds	7440-62-2	nc	690	510	420	1100
Vinyl Acetate	108-05-4	nc	2100	1400	1100	1.1
Vinyl Chloride	75-01-4	ca	0.69	0.65	0.62	0.00080
Xylenes <sup>7</sup>	1330-20-7	nc	55 <sup>10</sup>	55 <sup>10</sup>	55 <sup>10</sup>	1.5
Zinc and Compounds	7440-66-6	nc	41000	30000	25000	4900

18 AAC 75.341(d) is repealed and readopted to read:

(d) If a responsible person uses method two for petroleum hydrocarbons under 18 AAC 75.340, the soil cleanup levels must be based on Table B2 in this subsection.

**TABLE B2. METHOD TWO - PETROLEUM HYDROCARBON SOIL CLEANUP LEVELS**

Petroleum Hydrocarbon Range	Arctic Zone <sup>2</sup> mg/kg			Under 40 Inch Zone <sup>3</sup>			Over 40 Inch Zone <sup>4</sup>			Maximum Allowable Concentrations <sup>17</sup> mg/kg
	Ingestion (mg/kg) <sup>18</sup>	Inhalation (mg/kg) <sup>19</sup>	Migration to Groundwater (mg/kg) <sup>6</sup>	Ingestion (mg/kg) <sup>16</sup>	Inhalation (mg/kg) <sup>17</sup>	Migration to groundwater (mg/kg) <sup>6</sup>	Ingestion (mg/kg) <sup>16</sup>	Inhalation (mg/kg) <sup>17</sup>	Migration to Groundwater (mg/kg) <sup>6</sup>	
<b>For Laboratory Analysis using AK Methods 101, 102, and 103</b>										
C <sub>6</sub> -C <sub>10</sub> GRO using AK 101	1400	1400	n/a	1400	1400	300	1400	1400	260	1400
C <sub>10</sub> -C <sub>25</sub> DRO using AK 102	12500	12500	n/a	10250	12500	250	8250	12500	230	12500
C <sub>25</sub> -C <sub>36</sub> RRO using AK 103	13700	22000	n/a	10000	22000	11000	8300	22000	9700	22000
<b>For Laboratory Analysis using AK Aliphatic and Aromatic Fraction Methods 101AA, 102AA, and 103AA</b>										
C <sub>6</sub> -C <sub>10</sub> Aliphatics	1000	1000	n/a	1000	1000	270	1000	1000	240	1000
C <sub>6</sub> -C <sub>10</sub> Aromatics	1000	1000	n/a	1000	1000	150	1000	1000	130	1000
C <sub>10</sub> -C <sub>25</sub> Aliphatics	10000	10000	n/a	10000	10000	7200	8300	10000	6400	10000
C <sub>10</sub> -C <sub>25</sub> Aromatics	5000	5000	n/a	4100	5000	100	3300	5000	90	5000
C <sub>25</sub> -C <sub>36</sub> Aliphatics	20000	20000	n/a	20000	20000	20000	20000	20000	20000	20000
C <sub>25</sub> -C <sub>36</sub> Aromatics	4100	10000	n/a	3000	10000	3300	2500	10000	2900	10000
See notes to table for further requirements. "n/a" means not applicable.										

**Notes to Tables B1 and B2:**

If applicable, site specific cleanup levels must be protective of migration to surface water.

Concentrations of hazardous substances in soil must be calculated and presented on a per dry weight basis. For volatile organic hazardous substances for which toxicity data is not currently available or calculated levels exceed the calculated saturation concentration, the cleanup level that applies at a site is the calculated saturation concentration determined using the equations set out in the *Procedures for Calculating Cleanup Levels*, adopted by reference in 18 AAC 75.340.

The cleanup level from Table B1 or B2 that applies at a site is the most stringent of the applicable exposure pathway-specific cleanup levels based on human health, ingestion, inhalation, or migration to groundwater.

1. “CAS Number” means the Chemical Abstract Service (CAS) registry number uniquely assigned to chemicals by the American Chemical Society and recorded in the CAS Registry System.
2. “Arctic zone” is defined at 18 AAC 75.990.
3. “Under 40 inch zone” means a site that receives mean annual precipitation of less than 40 inches each year.
4. “Over 40 inch zone” means a site that receives mean annual precipitation of 40 or more inches each year.
5. “Human Health” means the cumulative exposure pathway through dermal contact, ingestion, and inhalation of volatile and particulate compounds from hazardous substances in the soil but excludes vapor intrusion pathway of indoor air inhalation.
6. “Migration to groundwater” means the potential for hazardous substances to leach to groundwater where they may result in a completed human exposure pathway through dermal

contact, ingestion, or inhalation of contaminants at or above levels listed in Table C at 18 AAC 75.345(b)(1); soil cleanup levels protective of migration to surface water must be determined on a site-specific basis.

7. If using method two or method three, the applicable petroleum hydrocarbon cleanup levels must be met in addition to the applicable chemical-specific cleanup levels for benzene, ethylbenzene, toluene, and total xylenes; the chemical-specific cleanup levels for the polynuclear aromatic hydrocarbons acenaphthene, acenaphthylene, anthracene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]pyrene, chrysene, dibenz[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-c,d]pyrene, naphthalene, phenanthrene, and pyrene must also be met unless the department determines that those cleanup levels need not be met to protect human health, safety, and welfare, and the environment.

8. Where one or more toxicological values were unavailable, toxicity values from surrogate compounds or other sources were used as follows:

(A) pyrene is a toxicity surrogate for acenaphthylene, benzo(g,h,i) perylene, and phenanthrene;

(B) 1,2-dichlorobenzene is a toxicity surrogate for 1,3-dichlorobenzene;

(C) diethylphthalate is a toxicity surrogate for dimethylphthalate;

(D) elemental mercury is a toxicity surrogate for mercuric chloride;

(E) EPA's January 8, 2009 Provisional Health Advisories for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS).

9. The ceiling limit of 100,000 mg/kg is equivalent to a chemical representing 10% by weight of the soil sample. At this contaminant concentration (and higher), the assumptions for soil contact may be violated (for example, soil adherence and wind-borne dispersion assumptions) due to the

presence of the foreign substance itself.

10. These levels are based on soil saturation level (C<sub>sat</sub>) using the equations set out in *Procedures for Calculating Cleanup Levels*, adopted by reference in 18 AAC 75.340. Refer to the *Procedures for Calculating Cumulative Risk*, adopted by reference in 18 AAC 75.325(g), for inhalation risk screening levels.

11. Due to the prevalence of naturally occurring arsenic throughout the state, arsenic at a site will be considered background unless anthropogenic contribution from a source, activity, or mobilization via another introduced contaminant is known or suspected.

12. Due to the prevalence of naturally occurring chromium III throughout Alaska, sample results reported for total chromium detected at a site will be considered background chromium III unless anthropogenic contribution of chromium III or VI from a source, activity, or mobilization via another introduced contaminant is known or suspected. The calculated chromium III migration to groundwater cleanup level exceeds 1 million parts per million.

13. Cyanide expressed as free, or physiologically available cyanide.

14. Lead cleanup levels are based on land use; for residential land use, the soil cleanup level is 400 mg/kg. For commercial or industrial land use, as applied in 18 AAC 75.340(e)(3), the soil cleanup level is 800 mg/kg; through an approved site-specific risk assessment, conducted according to the *Risk Assessment Procedures Manual*, adopted by reference at 18 AAC 75.340, approved exposure models may be used to evaluate exposure to a child resident or an adult worker; a responsible person may also propose an alternative cleanup level, through a site-specific risk assessment conducted according to the *Manual*, and based on a chemical speciation of the lead present at the site. For soils contaminated with lead more than 15 feet below ground surface, lead cleanup levels will be determined on a site-specific basis.

15. For unrestricted land use, polychlorinated biphenyls (PCBs) in soil shall be cleaned up to the listed value, unless the department determines that a different cleanup level is necessary as provided in 18 AAC 75.340(i); with the prior approval of the department, PCBs in soil may be cleaned up to

(A) between 1 and 10 mg/kg if the responsible person

(i) caps each area containing PCBs in soil at levels between 1 and 10 mg/kg; for purposes of this Note 8, “caps” means covering an area of PCB contaminated soil with an appropriate material to prevent exposure of humans and the environment to PCBs; to be approved, a cap must be designed and constructed of a material acceptable to the department and of sufficient strength and durability to withstand the use of the surface that is exposed to the environment; within 72 hours after discovery of a breach to the integrity of a cap, the responsible person or the landowner shall initiate repairs to that breach; and

(ii) provides the department within 60 days after completing the cleanup, documentation that the responsible person has recorded a deed notation in the appropriate land records, or on another instrument that is normally examined during a title search, documenting that PCBs remain in the soil, that the contaminated soil has been capped, and that subsequent interest holders may have legal obligations with respect to the cap and the contaminated soil; or

(B) an alternative PCB soil cleanup level developed through an approved site-specific risk assessment, conducted according to the *Risk Assessment Procedures Manual*, adopted by reference at 18 AAC 75.340.

16. This cleanup level is for 2,3,7,8-Tetrachlorodibenzo-*p*-Dioxin (TCDD) only; all cleanup

levels for polychlorinated dibenzo-*p*-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) congeners must be determined on a site-specific basis.

17. This level is the concentration of C<sub>6</sub> - C<sub>10</sub>, C<sub>10</sub> - C<sub>25</sub>, or C<sub>25</sub> - C<sub>36</sub> petroleum hydrocarbon range in surface and subsurface soil that if exceeded, indicates an increased potential for hazardous substance migration or for risk to human health, safety or welfare, or to the environment; the level of a petroleum hydrocarbon may not remain at a concentration above the maximum allowable concentration unless a responsible person demonstrates that the petroleum hydrocarbon will not migrate and will not pose a significant risk to human health, safety, or welfare, or to the environment; free product must be recovered as required by 18 AAC 75.325(f).

18. “Ingestion” means a potential pathway of exposure to hazardous substances through direct consumption of the soil.

19. “Inhalation” means a potential pathway to volatile organic hazardous substances in the soil through volatilization.

(Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; am 10/9/2008, Register 188; am \_\_/\_\_/\_\_\_\_, Register \_\_)

<b>Authority:</b>	AS 46.03.020	AS 46.03.740	AS 46.04.070
	AS 46.03.050	AS 46.03.745	AS 46.09.020
	AS 46.03.710	AS 46.04.020	

**Editor’s note:** The applicable EPA rule governing disposal and cleanup of PCB contaminated facilities under 40 C.F.R. Part 761.61 (PCB remediation waste) may apply to PCB cleanup at a contaminated site. The PCB cleanup levels listed in Table B1 are based on cleanup levels referred to in 40 C.F.R. 761.61 for high occupancy areas with no cap.

18 AAC 75.345 is repealed and readopted to read:

**18 AAC 75.345. Groundwater and surface water cleanup levels.** (a) Except as otherwise provided in this section, cleanup of a discharge or release of a hazardous substance to groundwater or surface water must meet the requirements of this section.

(b) Contaminated groundwater must meet

(1) the cleanup levels in Table C if the current use or the reasonably expected potential future use of the groundwater, determined under 18 AAC 75.350, is a drinking water source;

**TABLE C. GROUNDWATER CLEANUP LEVELS**

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(ca); noncarcinogen(nc); mutagen(m)	Groundwater Human Health Cleanup Level <sup>2</sup> (µg/L)
Acenaphthene	83-32-9	nc	530
Acenaphthylene <sup>3</sup>	208-96-8	nc	260
Acetone	67-64-1	nc	14000
Aldrin	309-00-2	ca	0.0092
Ammonium Perchlorate	7790-98-9	nc	14
Anthracene	120-12-7	nc	43 <sup>4</sup>
Antimony (metallic)	7440-36-0	nc	7.8
Arsenic, Inorganic <sup>5</sup>	7440-38-2	ca	0.52
Barium	7440-39-3	nc	3800
Benz[a]anthracene	56-55-3	m	0.12
Benzaldehyde	100-52-7	nc	1900
Benzene	71-43-2	ca	4.5
Benzo[a]pyrene	50-32-8	m	0.034
Benzo[b]fluoranthene	205-99-2	m	0.34
Benzo[g,h,i]perylene <sup>3</sup>	191-24-2	nc	0.26 <sup>4</sup>
Benzo[k]fluoranthene	207-08-9	m	0.80 <sup>4</sup>
Benzoic Acid	65-85-0	nc	75000
Benzyl Alcohol	100-51-6	nc	2000
Beryllium and compounds	7440-41-7	nc	25
Bis(2-chloroethyl)ether	111-44-4	ca	0.14
Bis(2-ethylhexyl)phthalate	117-81-7	ca	56

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(ca); noncarcinogen(nc); mutagen(m)	Groundwater Human Health Cleanup Level <sup>2</sup> (µg/L)
Bromobenzene	108-86-1	nc	62
Bromodichloromethane	75-27-4	ca	1.3
Bromoform	75-25-2	ca	33
Bromomethane	74-83-9	nc	7.5
Butadiene, 1,3-	106-99-0	ca	0.18
Butanol, N-	71-36-3	nc	2000
Butyl Benzyl Phthalate	85-68-7	ca	160
Butylbenzene, n-	104-51-8	nc	1000
Butylbenzene, sec-	135-98-8	nc	2000
Butylbenzene, tert-	98-06-6	nc	690
Cadmium (Diet)	7440-43-9	nc	9.2
Carbon Disulfide	75-15-0	nc	810
Carbon Tetrachloride	56-23-5	ca	4.5
Chlordane	12789-03-6	ca	0.45
Chlordecone (Kepone)	143-50-0	ca	0.035
Chloroaniline, p-	106-47-8	ca	3.6
Chlorobenzene	108-90-7	nc	78
Chloroform	67-66-3	ca	2.2
Chloromethane	74-87-3	nc	190
Chloronaphthalene, Beta-	91-58-7	nc	750
Chlorophenol, 2-	95-57-8	nc	91
Chromium(III), Insoluble Salts <sup>6</sup>	16065-83-1	nc	22000
Chromium(VI) <sup>6</sup>	18540-29-9	m	0.35
Chrysene	218-01-9	m	2.0 <sup>4</sup>
Copper	7440-50-8	nc	800
Cresol, m-	108-39-4	nc	930
Cresol, o-	95-48-7	nc	930
Cresol, p-	106-44-5	nc	1900
Cumene	98-82-8	nc	450
Cyanide (CN-)	57-12-5	nc	1.5
Cyclohexane	110-82-7	nc	13000
DDD	72-54-8	ca	0.31
DDE, p,p'-	72-55-9	ca	0.46
DDT	50-29-3	ca	2.3

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(ca); noncarcinogen(nc); mutagen(m)	Groundwater Human Health Cleanup Level <sup>2</sup> (µg/L)
Dibenz[a,h]anthracene	53-70-3	m	0.034
Dibenzofuran	132-64-9	nc	7.9
Dibromochloromethane	124-48-1	ca	1.7
Dibromoethane, 1,2- (Ethylene Dibromide)	106-93-4	ca	0.075
Dibromomethane (Methylene Bromide)	74-95-3	nc	8.0
Dibutyl Phthalate	84-74-2	nc	900
Dichlorobenzene, 1,2-	95-50-1	nc	300
Dichlorobenzene, 1,3- <sup>3</sup>	541-73-1	nc	300
Dichlorobenzene, 1,4-	106-46-7	ca	4.8
Dichlorobenzidine, 3,3'-	91-94-1	ca	1.2
Dichlorodifluoromethane	75-71-8	nc	200
Dichloroethane, 1,1-	75-34-3	ca	27
Dichloroethane, 1,2-	107-06-2	ca	1.7
Dichloroethylene, 1,1-	75-35-4	nc	280
Dichloroethylene, 1,2-cis-	156-59-2	nc	36
Dichloroethylene, 1,2-trans-	156-60-5	nc	360
Dichlorophenol, 2,4-	120-83-2	nc	46
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	nc	170
Dichloropropane, 1,2-	78-87-5	ca	4.4
Dichloropropene, 1,3-	542-75-6	ca	4.7
Dieldrin	60-57-1	ca	0.017
Diethyl Phthalate	84-66-2	nc	15000
Dimethylphenol, 2,4-	105-67-9	nc	360
Dimethylphthalate <sup>3</sup>	131-11-3	nc	16000
Dinitrobenzene, 1,2-	528-29-0	nc	1.9
Dinitrobenzene, 1,3-	99-65-0	nc	2.0
Dinitrobenzene, 1,4-	100-25-4	nc	2.0
Dinitrophenol, 2,4-	51-28-5	nc	39
Dinitrotoluene, 2,4-	121-14-2	ca	2.4
Dinitrotoluene, 2,6-	606-20-2	ca	0.48
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	nc	39
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	nc	39
Dioxane, 1,4-	123-91-1	ca	4.6
Diphenylamine	122-39-4	nc	310

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(ca); noncarcinogen(nc); mutagen(m)	Groundwater Human Health Cleanup Level <sup>2</sup> (µg/L)
Endosulfan	115-29-7	nc	100
Endrin	72-20-8	nc	2.3
Ethyl Chloride	75-00-3	nc	21000
Ethylbenzene	100-41-4	ca	15
Ethylene Glycol	107-21-1	nc	40000
Fluoranthene	206-44-0	nc	260 <sup>4</sup>
Fluorene	86-73-7	nc	290
Formaldehyde	50-00-0	nc	4.3
Heptachlor	76-44-8	ca	0.014
Heptachlor Epoxide	1024-57-3	ca	0.014
Hexachlorobenzene	118-74-1	ca	0.098
Hexachlorobutadiene	87-68-3	nc	1.4
Hexachlorocyclohexane, Alpha-	319-84-6	ca	0.071
Hexachlorocyclohexane, Beta-	319-85-7	ca	0.25
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	ca	0.41
Hexachlorocyclopentadiene	77-47-4	nc	0.41
Hexachloroethane	67-72-1	nc	3.3
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ca	7.0
Hexane, N-	110-54-3	nc	320
Hexanone, 2-	591-78-6	nc	38
Hydrazine	302-01-2	ca	0.011
Indeno[1,2,3-cd]pyrene	193-39-5	m	0.19 <sup>4</sup>
Isophorone	78-59-1	ca	780
Isopropanol	67-63-0	nc	410
Lead and Compounds <sup>7</sup>	7439-92-1	nc	15
Mercuric Chloride <sup>3</sup>	7487-94-7	nc	5.7
Mercury (elemental)	7439-97-6	nc	0.52
Methanol	67-56-1	nc	20000
Methoxychlor	72-43-5	nc	37
Methyl Ethyl Ketone (2-Butanone)	78-93-3	nc	5600
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	nc	1200
Methyl Mercury	22967-92-6	nc	2.0
Methyl tert-Butyl Ether (MTBE)	1634-04-4	ca	140
Methylene Chloride	75-09-2	nc	110

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(ca); noncarcinogen(nc); mutagen(m)	Groundwater Human Health Cleanup Level <sup>2</sup> (µg/L)
Methylnaphthalene, 1-	90-12-0	ca	11
Methylnaphthalene, 2-	91-57-6	nc	36
Naphthalene	91-20-3	ca	1.7
Nickel Soluble Salts	7440-02-0	nc	390
Nitrobenzene	98-95-3	ca	1.4
Nitroglycerin	55-63-0	nc	2.0
Nitroguanidine	556-88-7	nc	2000
Nitrosodimethylamine, N-	62-75-9	m	0.0011
Nitroso-di-N-propylamine, N-	621-64-7	ca	0.11
Nitrosodiphenylamine, N-	86-30-6	ca	120
Nitrotoluene, m-	99-08-1	nc	1.7
Nitrotoluene, o-	88-72-2	ca	3.1
Nitrotoluene, p-	99-99-0	nc	42
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	nc	1000
Octyl Phthalate, di-N-	117-84-0	nc	22 <sup>4</sup>
Pentachlorophenol	87-86-5	ca	0.40
Pentaerythritol tetranitrate (PETN)	78-11-5	nc	39
Perfluorooctane Sulphonic Acid (PFOS) <sup>3</sup>	1763-23-1	nc	0.16
Perfluorooctanoic Acid (PFOA) <sup>3</sup>	335-67-1	nc	0.40
Phenanthrene <sup>3</sup>	85-01-8	nc	170
Phenol	108-95-2	nc	5800
Phosphorus, White	7723-14-0	nc	0.40
Polychlorinated Biphenyls (PCBs)	1336-36-3	ca	0.50
Propyl benzene	103-65-1	nc	660
Pyrene	129-00-0	nc	120
Selenium	7782-49-2	nc	100
Silver	7440-22-4	nc	94
Styrene	100-42-5	nc	1200
TCDD, 2,3,7,8- <sup>8</sup>	1746-01-6	ca	1.2E-06
Tetrachloroethane, 1,1,1,2-	630-20-6	ca	5.7
Tetrachloroethane, 1,1,2,2-	79-34-5	ca	0.76
Tetrachloroethylene	127-18-4	nc	41
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	nc	39
Thallium (Soluble Salts)	7440-28-0	nc	0.20

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number <sup>1</sup>	Most Stringent Pathway: carcinogen(ca); noncarcinogen(nc); mutagen(m)	Groundwater Human Health Cleanup Level <sup>2</sup> (µg/L)
Toluene	108-88-3	nc	1100
Toxaphene	8001-35-2	ca	0.15
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	nc	55000
Trichlorobenzene, 1,2,3-	87-61-6	nc	7.0
Trichlorobenzene, 1,2,4-	120-82-1	nc	4.0
Trichloroethane, 1,1,1-	71-55-6	nc	8000
Trichloroethane, 1,1,2-	79-00-5	nc	0.41
Trichloroethylene	79-01-6	nc	2.8
Trichlorofluoromethane	75-69-4	nc	1100
Trichlorophenol, 2,4,5-	95-95-4	nc	1200
Trichlorophenol, 2,4,6-	88-06-2	nc	12
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	nc	160
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	nc	110
Trichloropropane, 1,2,3-	96-18-4	m	0.0075
Trimethylbenzene, 1,2,4-	95-63-6	nc	15
Trimethylbenzene, 1,3,5-	108-67-8	nc	120
Tri-n-butyltin	688-73-3	nc	3.7
Trinitrobenzene, 1,3,5-	99-35-4	nc	590
Trinitrotoluene, 2,4,6-	118-96-7	nc	9.8
Vanadium and Compounds	7440-62-2	nc	86
Vinyl Acetate	108-05-4	nc	410
Vinyl Chloride	75-01-4	ca	0.19
Xylenes	1330-20-7	nc	190
Zinc and Compounds	7440-66-6	nc	6000
<b>PETROLEUM HYDROCARBONS</b>			
C <sub>6</sub> -C <sub>10</sub> GRO		nc	2200
C <sub>10</sub> -C <sub>25</sub> DRO		nc	1500
C <sub>25</sub> -C <sub>36</sub> RRO		nc	1100

**Notes to Table C:**

1. "CAS Number" means the Chemical Abstract Service (CAS) registry number uniquely assigned to chemicals by the American Chemical Society and recorded in the CAS Registry

System.

2. “Human Health” means cumulative exposure pathway through dermal contact, ingestion, and inhalation of volatile compounds from hazardous substances in the water.

3. Where one or more toxicological values were unavailable, toxicity values from surrogate compounds or other sources were used as follows:

(A) pyrene is a toxicity surrogate for acenaphthylene, benzo(g,h,i) perylene, and phenanthrene;

(B) 1,2-dichlorobenzene is a toxicity surrogate for 1,3-dichlorobenzene;

(C) diethylphthalate is a toxicity surrogate for dimethylphthalate;

(D) elemental mercury is a toxicity surrogate for mercuric chloride.

(E) EPA’s January 8, 2009 Provisional Health Advisories for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS).

4. These levels are based on water solubility using the data set out in *Procedures for Calculating Cleanup Levels*, adopted by reference in 18 AAC 75.340.

5. Due to the prevalence of naturally occurring arsenic throughout the state, arsenic at a site will be considered background unless anthropogenic contribution from a source, activity, or mobilization via another introduced contaminant is known or suspected.

6. Due to the prevalence of naturally occurring chromium III throughout Alaska, sample results reported for total chromium detected at a site will be considered background chromium III unless anthropogenic contribution of chromium III or VI from a source, activity, or mobilization via another introduced contaminant is known or suspected.

7. Lead cleanup level is taken from EPA's action level for lead in water.

8. This cleanup level is for 2,3,7,8-Tetrachlorodibenzo-*p*-Dioxin (TCDD) only; all cleanup

levels for polychlorinated dibenzo-*p*-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) congeners must be determined on a site-specific basis.

(2) an approved cleanup level based on an approved site-specific risk assessment conducted under the *Risk Assessment Procedures Manual*, adopted by reference in 18 AAC 75.340;

(3) a site-specific cleanup level for a hazardous substance not listed under 18 AAC 75.345(b)(1) proposed by the responsible party and approved by the department, using the procedures set out in the department's *Risk Assessment Procedures Manual*, adopted by reference in 18 AAC 75.340, unless the responsible person demonstrates that a site-specific cleanup level is not necessary to ensure protection of human health, safety, and welfare, and of the environment; or

(4) a site-specific cleanup level for a hazardous substance not listed under 18 AAC 75.345(b)(1) set by the department using the procedures set out in the department's *Risk Assessment Procedures Manual*, adopted by reference in 18 AAC 75.340.

(c) The department may set a more stringent cleanup level than the applicable level under (b) of this section, if the department determines that a more stringent cleanup level is necessary to ensure protection of human health, safety, or welfare, or of the environment, and based on actual onsite and actual or likely offsite uses of the groundwater that are likely to be affected by the hazardous substance. In making a determination under this subsection, the department may consider:

(1) The risks to current or potential future users of the groundwater as a drinking water source, as determined under 18 AAC 75.350;

(2) the presence of sensitive subpopulations who respond biologically to lower

levels of exposure to a hazardous substance;

(3) the groundwater use classifications other than for drinking water, as set out under 18 AAC 70.020(a)(1)(A) and 18 AAC 70.050(2);

(4) the primary or secondary maximum contaminant levels in 18 AAC 80.300 for actual or likely drinking water supplies;

(5) a health advisory value developed by the Environmental Protection Agency's Office of Water; and

(6) the cleanup levels in this section for groundwater contaminated with petroleum, the contamination may not exceed, for each petroleum hydrocarbon range applicable, including the gasoline range, the diesel range, and the residual range,

(A) a threshold odor number (TON) of 1 for odor, as measured by Method 2150B, *Standard Methods for the Examination of Water and Wastewater*, 21<sup>st</sup> edition, American Public Health Association (2005), adopted by reference; or

(B) a flavor threshold number (FTN) of 1 for flavor, as measured by Method 2160B, *Standard Methods for the Examination of Water and Wastewater*, adopted by reference in (A) of this paragraph.

(d) Where the department determines that toxicity information is insufficient to establish a cleanup level for a hazardous substance or a pollutant as defined under AS 46.03.900(20) that ensures protection of human health, safety, and welfare, and of the environment, the department may require a responsible person to provide an alternative source of drinking water for the affected parties or implement other institutional controls under 18 AAC 75.375 until a cleanup level is established under 18 AAC 75.345(b)(2), (b)(3) or (b)(4).

(e) Toxic substances in sediment may not cause, and may not be reasonably be expected

to cause, a toxic or other deleterious effect on aquatic life, except as authorized under 18 AAC 70. For purposes of this subsection, "toxic substances" has the meaning given in 18 AAC 70.990.

(f) The point of compliance where groundwater cleanup levels must be attained is throughout the site from each point extending vertically from the uppermost level of the zone of saturation to the lowest possible depth that could potentially be affected by the discharge or release of a hazardous substance, unless the department approves an alternative point of compliance as part of the cleanup action under 18 AAC 75.360. For the department to approve an alternative point of compliance under this subsection, the

(1) alternative point of compliance must be within the existing groundwater contamination plume; and

(2) cleanup levels established in (b) and (c) of this section must be met at the property boundary in an area where the current use or reasonably expected potential future use of groundwater in the neighboring property is determined to be a source of drinking water, unless a responsible person

(A) demonstrates that attainment of the applicable groundwater cleanup levels is not practicable; and

(B) provides an alternative source of water for affected persons.

(g) Groundwater that is closely connected hydrologically to nearby surface water may not cause a violation of the water quality standards in 18 AAC 70 for surface water or sediment. The department will, in consultation with local, state, and federal officials and the public, establish points of compliance with this subsection, taking into account the following factors:

(1) groundwater travel time and distance from sources of hazardous substances to

surface water;

(2) the contribution of the groundwater to the chemical and physical quantity and quality of the surface water;

(3) organisms living in or dependent upon the groundwater to surface water ecosystems;

(4) climatic, tidal, or seasonal variations;

(5) feasibility of attaining applicable water quality standards to support the designated uses of the surface water;

(6) presence of sediment contamination;

(7) if conducted for the site, the conclusions of a site-specific risk assessment conducted under the *Risk Assessment Procedures Manual*, adopted by reference in

18 AAC 75.340.

(h) If the groundwater point of compliance is established at or near a property boundary or if groundwater is closely connected hydrologically to a surface waterbody, the department will, if the department determines that sentinel monitoring is necessary to ensure protection of human health, safety, or welfare, or the environment, require a responsible person to develop sentinel monitoring wells that monitor for any hazardous substances likely to migrate to the applicable point of compliance at concentrations that exceed the cleanup levels.

(i) The department will require long-term monitoring if the department determines that monitoring is necessary to ensure protection of human health, safety, or welfare, or of the environment and if groundwater, surface water, soil, or sediment contains residual concentrations of a hazardous substance that exceed the applicable cleanup levels. If long-term monitoring is required under this subsection, a responsible person shall submit a plan and schedule for

monitoring as part of the requirements for cleanup operations under 18 AAC 75.360. Unless otherwise approved by the department, a responsible person shall conduct monitoring quarterly for at least one year to establish the concentration trend. The department will evaluate the monitoring program yearly. If the monitoring indicates that the concentration trend

(1) is increasing, the department will require additional follow-up monitoring and assess the need for additional cleanup; or

(2) is stable or decreasing, and that hazardous substance migration is not occurring, the department will decrease or discontinue the monitoring frequency and locations, if the responsible person demonstrates that continued monitoring is not necessary to ensure protection of human health, safety, and welfare, and of the environment.

(j) The department will require groundwater, surface water, soil, or sediment monitoring to estimate contaminant flux rates and to address potential bioaccumulation of each hazardous substance at the site, if the department determines that monitoring is necessary to ensure protection of human health, safety, or welfare, or of the environment. If monitoring is required under this subsection, a responsible person shall submit a plan and schedule for monitoring as part of the cleanup operation requirements under 18 AAC 75.360.

(k) Groundwater monitoring wells must be installed, developed, and decommissioned in accordance with an approved method that is protective of human health, safety, and welfare, and of the environment.

(l) For a cleanup conducted under (b)(1) of this section, a chemical that is detected at one-tenth or more of the Table C value must be included when calculating cumulative risk under 18 AAC 75.325(g). (Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; am 1/30/2003, Register 165; am 10/9/2008, Register 188; am 6/17/2015, Register 214; am \_\_/\_\_/\_\_\_\_, Register

\_\_\_)

**Authority:** AS 46.03.020 AS 46.03.745 AS 46.04.070  
 AS 46.03.050 AS 46.03.755 AS 46.09.010  
 AS 46.03.710 AS 46.03.900 AS 46.09.020  
 AS 46.03.740 AS 46.04.020

**Editor’s note:** *Standard Methods for the Examination of Water and Wastewater*, adopted by reference in this section, may be purchased from the American Water Works Association Bookstore, 6666 West Quincy Avenue, Denver, Colorado 80235, or may be viewed at the department’s Anchorage, Fairbanks, Juneau, and Soldotna offices.

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18 AAC 75.370(a)(2) is amended to read:

(2) store contaminated soil

(A) 100 feet or more from surface water, a private water system, a Class C public water system as defined in 18 AAC 80.1990, or a fresh water supply system that uses groundwater for a use designated in 18 AAC 70.020(a)(1)(A) and

**18 AAC 70.050(2)** [18 AAC 70.050(a)(2)]; and

(B) 200 feet or more from a water source serving a **community water system, a non-transient non-community water system, or a transient non-community water system** [CLASS A OR CLASS B PUBLIC WATER SYSTEM], as defined in 18 AAC 80.1990;

(Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; am 10/9/2008, Register 188; am 6/17/2015, Register 214; am \_\_/\_\_/\_\_\_\_, Register \_\_\_)

**Authority:** AS 46.03.020 AS 46.03.740 AS 46.04.070

AS 46.03.050	AS 46.03.745	AS 46.09.020
AS 46.03.710	AS 46.04.020	

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18 AAC 75.990 is amended by adding new paragraphs to read:

(190) “mutagen” means a hazardous substance capable of inducing change to genetic material.

(191) “mutagenic” means of or relating to a mutagen.

(192) “sensitive subpopulation” means a group of individuals that is at increased risk of some adverse health event or outcome after exposure to a contaminant.

(Eff. 5/14/92, Register 122; am 9/25/93, Register 127; am 4/4/97, Register 142; am 4/11/97, Register 142; am 1/22/99, Register 149; am 8/27/2000, Register 155; am 10/28/2000, Register 156; am 11/27/2002, Register 164; am 12/14/2002, Register 164; am 1/30/2003, Register 165; am 8/8/2003, Register 167; am 5/26/2004, Register 170; am 12/30/2006, Register 180; am 10/9/2008, Register 188; am 4/8/2012, Register 202; am 9/4/2014, Register 211; am 6/17/2015, Register 214; am \_\_/\_\_/\_\_\_\_, Register \_\_\_\_)

<b>Authority:</b>	AS 46.03.020	AS 46.03.755	AS 46.04.055
	AS 46.03.050	AS 46.03.822	AS 46.04.070
	AS 46.03.710	AS 46.04.020	AS 46.08.140
	AS 46.03.740	AS 46.04.030	AS 46.09.010
	AS 46.03.745	AS 46.04.035	AS 46.09.020