

**DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**



18 AAC 75

**Oil and Other Hazardous Substances
Pollution Control**

Public Comment Draft

August 26, 2015

**Comment Period Ends
December 11, 2015, 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 July 15, 2015** [CUMULATIVE RISK GUIDANCE, JUNE 9, 2008]. The department's **Procedures for Calculating Cumulative Risk, dated July 15, 2015** [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, dated July 15, 2015** [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 ____)

Authority: 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.

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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 exposure or migration 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 any site-specific calculated level and the listed value for that compound, if any, in Table B1 of 18 AAC 75.341(c) or Table B2 of 18 AAC 75.341(d) for any other exposure or migration pathway that is present at the site.**

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 compound 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 July 15, 2015** [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 **levels 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 **and agreement to create, maintain, and abide by institutional controls from** 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 **and agreement to create, maintain, and abide by institutional controls from** 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 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.

. . .

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	carcinogen(c); noncarcinogen(nc); mutagen(m) ¹⁸	Arctic Zone ¹	Under 40 Inch Zone ²	Over 40 Inch Zone ³	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Acenaphthene ¹⁴	83-32-9	nc	6280	4650	3800	36.9
Acenaphthylene ^{14,19}	208-96-8	nc	3140	2320	1900	18.0
Acetone	67-64-1	nc	1.03E+05 ¹²	81300	66100	37.6
Aldrin	309-00-2	ca	0.67	0.494	0.402	0.00995
Ammonium Perchlorate	7790-98-9	nc	95.8	71	58.1	0.0369
Anthracene ¹⁴	120-12-7	nc	31400	23200	19000	385
Antimony (metallic)	7440-36-0	nc	54.8	40.6	33.2	4.65
Arsenic, Inorganic ¹⁵	7440-38-2	ca	11.8	8.77	7.18	0.199
Barium	7440-39-3	nc	26800	19800	16200	2050
Benz[a]anthracene ¹⁴	56-55-3	m	2.74	2.03	1.66	0.280
Benzaldehyde	100-52-7	nc	774 ¹²	774 ¹²	774 ¹²	5.37
Benzene ¹⁴	71-43-2	ca	16.4	11.3	8.72	0.0220
Benzo[a]pyrene ¹⁴	50-32-8	m	0.275	0.204	0.167	0.266
Benzo[b]fluoranthene ¹⁴	205-99-2	m	2.75	2.04	1.67	2.72
Benzo[g,h,i]perylene ^{14,19}	191-24-2	nc	3140	2320	1900	15500
Benzo[k]fluoranthene ¹⁴	207-08-9	m	27.5	20.4	16.7	26.6
Benzoic Acid	65-85-0	nc	4.42E+05	3.28E+05	2.68E+05	215
Benzyl Alcohol	100-51-6	nc	11100	8190	6700	5.73
Beryllium and compounds	7440-41-7	nc	272	202	165	257
Bis(2-chloroethyl)ether	111-44-4	ca	4.03	2.83	2.23	0.000418
Bis(2-ethylhexyl)phthalate	117-81-7	ca	678	502	411	88.0
Bromobenzene	108-86-1	nc	157 ¹²	157 ¹²	157 ¹²	0.364
Bromodichloromethane	75-27-4	ca	5.30	3.63	2.81	0.00425
Bromoform	75-25-2	ca	341	237	185	0.101
Bromomethane	74-83-9	nc	14.9	10.2	7.93	0.0239
Butadiene, 1,3-	106-99-0	ca	1.23	0.862	0.678	0.00121
Butanol, N-	71-36-3	nc	6540 ¹²	6540 ¹²	6540 ¹²	5.28

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
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			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Butyl Benzyl Phthalate	85-68-7	ca	5000	3700	3030	15.4
Butylbenzene, n-	104-51-8	nc	20.1 ¹²	20.1 ¹²	20.1 ¹²	23.0
Butylbenzene, sec-	135-98-8	nc	27.6 ¹²	27.6 ¹²	27.6 ¹²	42.2
Butylbenzene, tert-	98-06-6	nc	35.5 ¹²	35.5 ¹²	35.5 ¹²	11.4
Cadmium	7440-43-9	nc	124	92.1	75.4	9.15
Carbon Disulfide	75-15-0	nc	504 ¹²	504 ¹²	504 ¹²	2.94
Carbon Tetrachloride	56-23-5	ca	13.3	9.12	7.06	0.0206
Chlordane	12789-03-6	ca	28.0	20.6	16.7	0.201
Chlordecone (Kepone)	143-50-0	ca	0.949	0.703	0.575	0.00807
Chloroaniline, p-	106-47-8	ca	47.5	35.2	28.8	0.0150
Chlorobenzene	108-90-7	nc	178 ¹²	178 ¹²	178 ¹²	0.457
Chloroform	67-66-3	ca	5.84	4.00	3.09	0.00715
Chloromethane	74-87-3	nc	246	168	130	0.608
Chloronaphthalene, Beta-	91-58-7	nc	8370	6200	5070	26.4
Chlorophenol, 2-	95-57-8	nc	684	507	415	0.610
Chromium(III), Insoluble Salts	16065-83-1	nc	2.05E+05	1.52E+05	1.24E+05	5.34E+08
Chromium(VI)	18540-29-9	m	5.27	3.90	3.19	0.0880
Chromium, Total ¹⁰	7440-47-3	m	5.27	3.90	3.18	0.0880
Chrysene ¹⁴	218-01-9	m	275	204	167	81.9
Copper	7440-50-8	nc	5480	4060	3320	371
Cresol, m-	108-39-4	nc	5530	4100	3350	6.11
Cresol, o-	95-48-7	nc	5530	4100	3350	6.19
Cresol, p-	106-44-5	nc	11100	8190	6700	12.2
Cumene	98-82-8	nc	54.4 ¹²	54.4 ¹²	54.4 ¹²	5.59
Cyanide (CN-) ⁹	57-12-5	nc	6.95	4.78	3.71	0.195
Cyclohexane	110-82-7	nc	77.4 ¹²	77.4 ¹²	77.4 ¹²	148
DDD	72-54-8	ca	39.6	29.3	24.0	0.474
DDE, p,p'-	72-55-9	ca	33.9	25.0	20.4	0.718
DDT	50-29-3	ca	33.0	24.4	20.0	5.10

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			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Dibenz[a,h]anthracene ¹⁴	53-70-3	m	0.275	0.204	0.167	0.866
Dibenzofuran	132-64-9	nc	128	94.7	77.4	0.971
Dibromochloromethane	124-48-1	ca	13.3	9.18	7.12	0.00520
Dibromoethane, 1,2- (Ethylene Dibromide)	106-93-4	ca	0.616	0.424	0.329	0.000238
Dibromomethane (Methylene Bromide)	74-95-3	nc	43.7	30.0	23.2	0.0237
Dibutyl Phthalate	84-74-2	nc	11100	8190	6700	16.1
Dichlorobenzene, 1,2-	95-50-1	nc	77.7 ¹²	77.7 ¹²	77.7 ¹²	2.36
Dichlorobenzene, 1,3- ¹⁹	541-73-1	nc	61.9 ¹²	61.9 ¹²	61.9 ¹²	2.30
Dichlorobenzene, 1,4-	106-46-7	ca	31.3	21.4	16.5	0.0371
Dichlorobenzidine, 3,3'-	91-94-1	ca	21.1	15.6	12.8	0.0554
Dichlorodifluoromethane	75-71-8	nc	218	149	115	3.90
Dichloroethane, 1,1-	75-34-3	ca	66.9	45.8	35.4	0.0916
Dichloroethane, 1,2-	107-06-2	ca	7.94	5.45	4.22	0.00550
Dichloroethylene, 1,1-	75-35-4	nc	481	331	256	1.23
Dichloroethylene, 1,2-cis-	156-59-2	nc	274	203	166	0.121
Dichloroethylene, 1,2-trans-	156-60-5	nc	960 ¹²	960 ¹²	960 ¹²	1.31
Dichlorophenol, 2,4-	120-83-2	nc	332	246	201	0.417
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	nc	1220	906	742	0.529
Dichloropropane, 1,2-	78-87-5	ca	16.2	11.1	8.59	0.0156
Dichloropropene, 1,3-	542-75-6	ca	29.4	20.5	16.0	0.0177
Dieldrin	60-57-1	ca	0.593	0.440	0.360	0.00457
Diethyl Phthalate	84-66-2	nc	88500	65600	53600	59.7
Dimethylphenol, 2,4-	105-67-9	nc	2210	1640	1340	3.24
Dimethylphthalate ¹⁹	131-11-3	nc	88500	65600	53600	47.7
Dinitrobenzene, 1,2-	528-29-0	nc	11.1	8.19	6.7	0.0143
Dinitrobenzene, 1,3-	99-65-0	nc	11.1	8.19	6.7	0.0142
Dinitrobenzene, 1,4-	100-25-4	nc	11.1	8.19	6.7	0.0142
Dinitrophenol, 2,4-	51-28-5	nc	221	164	134	0.339
Dinitrotoluene, 2,4-	121-14-2	ca	30.5	22.6	18.5	0.0243

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			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Dinitrotoluene, 2,6-	606-20-2	ca	6.34	4.70	3.84	0.00503
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	nc	270	200	164	0.246
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	nc	268	199	162	0.246
Dioxane, 1,4-	123-91-1	ca	99.5	72.6	58.7	0.0123
Diphenylamine	122-39-4	nc	2770	2050	1680	4.25
Endosulfan	115-29-7	nc	821	608	498	9.28
Endrin	72-20-8	nc	33.2	24.6	20.1	0.611
Ethyl Chloride	75-00-3	nc	1390 ¹²	1390 ¹²	1390 ¹²	72.2
Ethylbenzene ¹⁴	100-41-4	ca	71.8	49.3	38.2	0.133
Ethylene Glycol	107-21-1	nc	2.21E+05	1.64E+05	1.34E+05	106
Fluoranthene ¹⁴	206-44-0	nc	4180	3100	2540	589
Fluorene ¹⁴	86-73-7	nc	4180	3100	2540	36.3
Formaldehyde	50-00-0	nc	427	292	225	0.0115
Heptachlor	76-44-8	ca	2.17	1.58	1.28	0.00743
Heptachlor Epoxide	1024-57-3	ca	1.18	0.862	0.700	0.00187
Hexachlorobenzene	118-74-1	ca	2.81	1.98	1.56	0.00825
Hexachlorobutadiene	87-68-3	nc	3.28 ¹²	3.28 ¹²	3.28 ¹²	0.0196
Hexachlorocyclohexane, Alpha-	319-84-6	ca	1.51	1.12	0.913	0.00283
Hexachlorocyclohexane, Beta-	319-85-7	ca	5.27	3.91	3.20	0.00989
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	ca	9.94	7.36	6.03	0.0162
Hexachlorocyclopentadiene	77-47-4	nc	2.05	1.40	1.08	0.00925
Hexachloroethane	67-72-1	nc	24.5	16.8	13.0	0.0177
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ca	106	78.6	64.3	0.0268
Hexane, N-	110-54-3	nc	135 ¹²	135 ¹²	135 ¹²	29.5
Hexanone, 2-	591-78-6	nc	378	270	215	0.108
Hydrazine ¹⁹	302-01-2	ca	0.788	0.547	0.399	3.09E-05
Indeno[1,2,3-cd]pyrene ¹⁴	193-39-5	m	2.75	2.04	1.67	8.84
Isophorone	78-59-1	ca	10000	7400	6060	2.73
Isopropanol	67-63-0	nc	13800	9470	7330	1.10

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			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Lead and Compounds ¹¹	7439-92-1	nc	400	400	400	-
Mercuric Chloride ¹⁹	7487-94-7	nc	41.1	30.4	24.9	3.90
Mercury (elemental)	7439-97-6	nc	3.13 ¹²	3.13 ¹²	3.13 ¹²	0.361
Methanol	67-56-1	nc	1.01E+05 ¹²	1.01E+05 ¹²	1.01E+05 ¹²	54.2
Methoxychlor	72-43-5	nc	553	410	335	13.2
Methyl Ethyl Ketone (2-Butanone)	78-93-3	nc	23400 ¹²	23400 ¹²	23400 ¹²	15.0
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	nc	2160 ¹²	2160 ¹²	2160 ¹²	3.50
Methyl Mercury ¹⁹	22967-92-6	nc	13.7	10.1	8.30	0.00562
Methyl tert-Butyl Ether (MTBE)	1634-04-4	ca	966	668	519	0.403
Methylene Chloride	75-09-2	nc	630	458	369	0.329
Methylnaphthalene, 1-	90-12-0	ca	307	228	186	0.400
Methylnaphthalene, 2-	91-57-6	nc	418	310	254	1.27
Naphthalene ¹⁴	91-20-3	ca	41.8	28.6	22.1	0.0381
Nickel Soluble Salts	7440-02-0	nc	2710	2000	1640	338
Nitrobenzene	98-95-3	ca	63.4	43.4	33.5	0.00790
Nitroglycerin	55-63-0	nc	11.1	8.19	6.70	0.00817
Nitroguanidine	556-88-7	nc	11100	8190	6700	5.83
Nitrosodimethylamine, N-	62-75-9	m	0.0358	0.0258	0.0207	3.29E-06
Nitroso-di-N-propylamine, N-	621-64-7	ca	1.36	1.00	0.822	0.000676
Nitrosodiphenylamine, N-	86-30-6	ca	1940	1440	1170	4.51
Nitrotoluene, m-	99-08-1	nc	11.1	8.19	6.70	0.0130
Nitrotoluene, o-	88-72-2	ca	55.3	41.0	33.5	0.0235
Nitrotoluene, p-	99-99-0	nc	442	328	268	0.315
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	nc	6750	5000	4090	9.67
Octyl Phthalate, di-N-	117-84-0	nc	1110	819	670	373
Pentachlorophenol	87-86-5	ca	17.9	13.2	10.8	0.0272
Pentaerythritol tetranitrate (PETN)	78-11-5	nc	221	164	134	0.431
Perfluorooctane Sulphonic Acid (PFOS) ¹⁹	1763-23-1	nc	4.11	3.04	2.49	0.571
Perfluorooctanoic acid (PFOA) ¹⁹	335-67-1	nc	2.74	2.03	1.66	0.142

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number	carcinogen(c); noncarcinogen(nc); mutagen(m) ¹⁸	Arctic Zone ¹	Under 40 Inch Zone ²	Over 40 Inch Zone ³	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Phenanthrene ^{14,19}	85-01-8	nc	3140	2320	1900	38.9
Phenol	108-95-2	nc	33200	24600	20100	29.5
Phosphorus, White	7723-14-0	nc	2.74	2.03	1.66	0.0195
Polychlorinated Biphenyls (total) ⁸	1336-36-3	ca	1.00	1.00	1.00	-
Propyl benzene	103-65-1	nc	51.9 ¹²	51.9 ¹²	51.9 ¹²	9.10
Pyrene ¹⁴	129-00-0	nc	3140	2320	1900	86.8
Selenium	7782-49-2	nc	684	507	415	6.85
Silver	7440-22-4	nc	684	507	415	10.6
Styrene	100-42-5	nc	176 ¹²	176 ¹²	176 ¹²	10.5
TCDD, 2,3,7,8- ⁷	1746-01-6	ca	8.17E-05	6.03E-05	4.91E-05	3.90E-06
Tetrachloroethane, 1,1,1,2-	630-20-6	ca	29.9	20.5	14.7	0.0288
Tetrachloroethane, 1,1,2,2-	79-34-5	ca	8.84	6.11	4.75	0.00296
Tetrachloroethylene	127-18-4	nc	68.4 ¹²	68.4 ¹²	68.4 ¹²	0.193
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	nc	273	202	166	2.50
Thallium (Soluble Salts)	7440-28-0	nc	1.37	1.01	0.830	0.188
Toluene ¹⁴	108-88-3	nc	203 ¹²	203 ¹²	203 ¹²	6.66
Toxaphene	8001-35-2	ca	8.63	6.39	5.23	0.156
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	nc	743 ¹²	743 ¹²	743 ¹²	1680
Trichlorobenzene, 1,2,3-	87-61-6	nc	110	81.1	66.4	0.147
Trichlorobenzene, 1,2,4-	120-82-1	nc	65.3	44.8	34.7	0.0822
Trichloroethane, 1,1,1-	71-55-6	nc	357 ¹²	357 ¹²	357 ¹²	32.4
Trichloroethane, 1,1,2-	79-00-5	nc	2.33	1.59	1.23	0.00144
Trichloroethylene	79-01-6	nc	7.13	4.91	3.81	0.0111
Trichlorofluoromethane	75-69-4	nc	984 ¹²	984 ¹²	898	8.98
Trichlorophenol, 2,4,5-	95-95-4	nc	11100	8190	6700	30.9
Trichlorophenol, 2,4,6-	88-06-2	nc	111	81.9	67.0	0.314
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	nc	1110	819	670	0.661
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	nc	885	656	536	0.551
Trichloropropane, 1,2,3-	96-18-4	m	0.0893	0.0662	0.0541	3.13E-05

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number	carcinogen(c); noncarcinogen(nc); mutagen(m) ¹⁸	Arctic Zone ¹	Under 40 Inch Zone ²	Over 40 Inch Zone ³	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Trimethylbenzene, 1,2,4-	95-63-6	nc	43.4 ¹²	43.4 ¹²	35.4	0.161
Trimethylbenzene, 1,3,5-	108-67-8	nc	37.1 ¹²	37.1 ¹²	37.1 ¹²	1.28
Tri-n-butyltin ¹⁹	688-73-3	nc	41.1	30.4	24.9	0.682
Trinitrobenzene, 1,3,5-	99-35-4	nc	3930	2910	2380	14.8
Trinitrotoluene, 2,4,6-	118-96-7	nc	63.6	47.1	38.5	0.390
Vanadium and Compounds	7440-62-2	nc	688	510	417	1140
Vinyl Acetate	108-05-4	nc	2100	1440	1110	1.12
Vinyl Chloride	75-01-4	ca	0.691	0.653	0.624	0.000800
Xylenes ¹⁴	1330-20-7	nc	55.4 ¹²	55.4 ¹²	55.4 ¹²	1.53
Zinc and Compounds	7440-66-6	nc	41100	30400	24900	4930

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 ¹ mg/kg			Under 40 Inch Zone ²			Over 40 Inch Zone ³			Maximum Allowable Concentrations ¹³ mg/kg
	Ingestion (mg/kg) ¹⁶	Inhalation (mg/kg) ¹⁷	Migration to Groundwater (mg/kg) ⁶	Ingestion (mg/kg) ¹⁶	Inhalation (mg/kg) ¹⁷	Migration to groundwater (mg/kg) ⁶	Ingestion (mg/kg) ¹⁶	Inhalation (mg/kg) ¹⁷	Migration to Groundwater (mg/kg) ⁶	
For Laboratory Analysis using AK Methods 101, 102, and 103										
C ₆ -C ₁₀ GRO using AK 101	1400	1400	n/a	1400	1400	300	1400	1400	260	1400
C ₁₀ -C ₂₅ DRO using AK 102	12500	12500	n/a	10250	12500	250	8250	12500	230	12500
C ₂₅ -C ₃₆ RRO using AK 103	13700	22000	n/a	10000	22000	11000	8300	22000	9700	22000
For Laboratory Analysis using AK Aliphatic and Aromatic Fraction Methods 101AA, 102AA, and 103AA										
C ₆ -C ₁₀ Aliphatics	1000	1000	n/a	1000	1000	270	1000	1000	240	1000
C ₆ -C ₁₀ Aromatics	1000	1000	n/a	1000	1000	150	1000	1000	130	1000
C ₁₀ -C ₂₅ Aliphatics	10000	10000	n/a	10000	10000	7200	8300	10000	6400	10000
C ₁₀ -C ₂₅ Aromatics	5000	5000	n/a	4100	5000	100	3300	5000	90	5000
C ₂₅ -C ₃₆ Aliphatics	20000	20000	n/a	20000	20000	20000	20000	20000	20000	20000
C ₂₅ -C ₃₆ 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. “Arctic zone” is defined at 18 AAC 75.990.
2. “under 40 inch zone” means a site that receives mean annual precipitation of less than 40 inches each year.
3. “over 40 inch zone” means a site that receives mean annual precipitation of 40 or more inches each year.
4. “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.
5. “human health” means exposure through dermal contact, ingestion, and inhalation of volatile compounds and compound particulates from hazardous substances in the soil but excludes 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. The cleanup level in Table B1 for dioxin 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.

8. 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.

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

10. The cleanup level for total chromium assumes 100% of a detected concentration is chromium VI.

11. 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.

12. These levels are based on soil saturation level (C_{sat}) 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.

13. This level is the concentration of C₆ - C₁₀, C₁₀ - C₂₅, or C₂₅ - C₃₆ 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).

14. 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.

15. Due to naturally occurring variable concentrations throughout the state, arsenic must be evaluated as a contaminant of potential concern on a site-specific basis.

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

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

18. “c” means carcinogenic, “nc” means noncarcinogenic, and “m” means mutagenic.

19. 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) EPA’s 2014 Health Effects Document for Perfluorooctanoic Acid (PFOA);

(E) EPA’s 2014 Health Effects Document for Perfluorooctane Sulfonate (PFOS);

(F) chloromethane is a toxicity surrogate for hydrazine and methyl mercury (Kd

value only); and

(G) elemental mercury is a toxicity surrogate for mercuric chloride. (Eff. 1/22/99,

Register 149; am 8/27/2000, Register 155; 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 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 Number¹	carcinogen(ca); noncarcinogen(nc); mutagen(m)²	Groundwater Cleanup Level (µg/L)³
Acenaphthene	83-32-9	nc	534
Acenaphthylene ⁵	208-96-8	nc	261
Acetone	67-64-1	nc	14100
Aldrin	309-00-2	ca	0.00917
Ammonium Perchlorate	7790-98-9	nc	14.0
Anthracene	120-12-7	nc	43.4 ⁶
Antimony (metallic)	7440-36-0	nc	7.79
Arsenic, Inorganic	7440-38-2	ca	0.517
Barium	7440-39-3	nc	3770
Benz[a]anthracene	56-55-3	m	0.120
Benzaldehyde	100-52-7	nc	1930
Benzene	71-43-2	ca	4.54
Benzo[a]pyrene ⁵	50-32-8	m	0.0343
Benzo[b]fluoranthene	205-99-2	m	0.343
Benzo[g,h,i]perylene ⁵	191-24-2	nc	602
Benzo[k]fluoranthene	207-08-9	m	0.800 ⁶
Benzoic Acid	65-85-0	nc	75200
Benzyl Alcohol	100-51-6	nc	1960
Beryllium and compounds	7440-41-7	nc	24.6
Bis(2-chloroethyl)ether	111-44-4	ca	0.136
Bis(2-ethylhexyl)phthalate	117-81-7	ca	55.6
Bromobenzene	108-86-1	nc	62.2
Bromodichloromethane	75-27-4	ca	1.34
Bromoform	75-25-2	ca	32.8
Bromomethane	74-83-9	nc	7.55
Butadiene, 1,3-	106-99-0	ca	0.180
Butanol, N-	71-36-3	nc	1970
Butyl Benzyl Phthalate	85-68-7	ca	159
Butylbenzene, n-	104-51-8	nc	1000
Butylbenzene, sec-	135-98-8	nc	2010

TABLE C. GROUNDWATER CLEANUP LEVELS			
Hazardous Substance	CAS Number ¹	carcinogen(ca); noncarcinogen(nc); mutagen(m) ²	Groundwater Cleanup Level (µg/L) ³
Butylbenzene, tert-	98-06-6	nc	690
Cadmium	7440-43-9	nc	9.21
Carbon Disulfide	75-15-0	nc	811
Carbon Tetrachloride	56-23-5	ca	4.53
Chlordane	12789-03-6	ca	0.448
Chlordecone (Kepone)	143-50-0	ca	0.0345
Chloroaniline, p-	106-47-8	ca	3.64
Chlorobenzene	108-90-7	nc	77.7
Chloroform	67-66-3	ca	2.21
Chloromethane	74-87-3	nc	188
Chloronaphthalene, Beta-	91-58-7	nc	746
Chlorophenol, 2-	95-57-8	nc	91.3
Chromium(III), Insoluble Salts	16065-83-1	nc	22500
Chromium(VI)	18540-29-9	m	0.347
Chromium, Total ⁴	7440-47-3	m	0.347
Chrysene	218-01-9	m	2.00 ⁶
Copper	7440-50-8	nc	799
Cresol, m-	108-39-4	nc	925
Cresol, o-	95-48-7	nc	926
Cresol, p-	106-44-5	nc	1850
Cumene	98-82-8	nc	450
Cyanide (CN-)	57-12-5	nc	1.46
Cyclohexane	110-82-7	nc	12500
DDD	72-54-8	ca	0.305
DDE, p,p'-	72-55-9	ca	0.462
DDT	50-29-3	ca	2.29
Dibenz[a,h]anthracene	53-70-3	m	0.0343
Dibenzofuran	132-64-9	nc	7.86
Dibromochloromethane	124-48-1	ca	1.68
Dibromoethane, 1,2- (Ethylene Dibromide)	106-93-4	ca	0.0746
Dibromomethane (Methylene Bromide)	74-95-3	nc	8.00
Dibutyl Phthalate	84-74-2	nc	901
Dichlorobenzene, 1,2-	95-50-1	nc	304
Dichlorobenzene, 1,3- ⁵	541-73-1	nc	298
Dichlorobenzene, 1,4-	106-46-7	ca	4.81

TABLE C. GROUNDWATER CLEANUP LEVELS			
Hazardous Substance	CAS Number ¹	carcinogen(ca); noncarcinogen(nc); mutagen(m) ²	Groundwater Cleanup Level (µg/L) ³
Dichlorobenzidine, 3,3'-	91-94-1	ca	1.24
Dichlorodifluoromethane	75-71-8	nc	197
Dichloroethane, 1,1-	75-34-3	ca	27.5
Dichloroethane, 1,2-	107-06-2	ca	1.71
Dichloroethylene, 1,1-	75-35-4	nc	285
Dichloroethylene, 1,2-cis-	156-59-2	nc	36.1
Dichloroethylene, 1,2-trans-	156-60-5	nc	361
Dichlorophenol, 2,4-	120-83-2	nc	45.7
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	nc	175
Dichloropropane, 1,2-	78-87-5	ca	4.37
Dichloropropene, 1,3-	542-75-6	ca	4.70
Dieldrin	60-57-1	ca	0.0171
Diethyl Phthalate	84-66-2	nc	14800
Dimethylphenol, 2,4-	105-67-9	nc	355
Dimethylphthalate ⁵	131-11-3	nc	15600
Dinitrobenzene, 1,2-	528-29-0	nc	1.93
Dinitrobenzene, 1,3-	99-65-0	nc	1.95
Dinitrobenzene, 1,4-	100-25-4	nc	1.95
Dinitrophenol, 2,4-	51-28-5	nc	38.8
Dinitrotoluene, 2,4-	121-14-2	ca	2.37
Dinitrotoluene, 2,6-	606-20-2	ca	0.484
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	nc	38.6
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	nc	38.6
Dioxane, 1,4-	123-91-1	ca	4.59
Diphenylamine	122-39-4	nc	314
Endosulfan	115-29-7	nc	101
Endrin	72-20-8	nc	2.28
Ethyl Chloride	75-00-3	nc	20900
Ethylbenzene	100-41-4	ca	14.9
Ethylene Glycol	107-21-1	nc	40100
Fluoranthene	206-44-0	nc	260 ⁶
Fluorene	86-73-7	nc	294
Formaldehyde	50-00-0	nc	4.32
Heptachlor	76-44-8	ca	0.0136
Heptachlor Epoxide	1024-57-3	ca	0.0138

TABLE C. GROUNDWATER CLEANUP LEVELS			
Hazardous Substance	CAS Number ¹	carcinogen(ca); noncarcinogen(nc); mutagen(m) ²	Groundwater Cleanup Level (µg/L) ³
Hexachlorobenzene	118-74-1	ca	0.0976
Hexachlorobutadiene	87-68-3	nc	1.37
Hexachlorocyclohexane, Alpha-	319-84-6	ca	0.0712
Hexachlorocyclohexane, Beta-	319-85-7	ca	0.249
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	ca	0.408
Hexachlorocyclopentadiene	77-47-4	nc	0.412
Hexachloroethane	67-72-1	nc	3.26
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ca	7.02
Hexane, N-	110-54-3	nc	324
Hexanone, 2-	591-78-6	nc	38.0
Hydrazine	302-01-2	ca	0.0110
Indeno[1,2,3-cd]pyrene	193-39-5	m	0.19 ⁶
Isophorone	78-59-1	ca	779
Isopropanol	67-63-0	nc	413
Lead and Compounds	7439-92-1	nc	15.0
Mercuric Chloride	7487-94-7	nc	5.66
Mercury (elemental)	7439-97-6	nc	0.626
Methanol	67-56-1	nc	20400
Methoxychlor	72-43-5	nc	37.0
Methyl Ethyl Ketone (2-Butanone)	78-93-3	nc	5570
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	nc	1240
Methyl Mercury	22967-92-6	nc	2.00
Methyl tert-Butyl Ether (MTBE)	1634-04-4	ca	143
Methylene Chloride	75-09-2	nc	107
Methylnaphthalene, 1-	90-12-0	ca	11.1
Methylnaphthalene, 2-	91-57-6	nc	35.9
Naphthalene	91-20-3	ca	1.65
Nickel Soluble Salts	7440-02-0	nc	392
Nitrobenzene	98-95-3	ca	1.40
Nitroglycerin	55-63-0	nc	1.96
Nitroguanidine	556-88-7	nc	2000
Nitrosodimethylamine, N-	62-75-9	m	0.00112
Nitroso-di-N-propylamine, N-	621-64-7	ca	0.108
Nitrosodiphenylamine, N-	86-30-6	ca	121
Nitrotoluene, m-	99-08-1	nc	1.75

TABLE C. GROUNDWATER CLEANUP LEVELS			
Hazardous Substance	CAS Number ¹	carcinogen(ca); noncarcinogen(nc); mutagen(m) ²	Groundwater Cleanup Level (µg/L) ³
Nitrotoluene, o-	88-72-2	ca	3.13
Nitrotoluene, p-	99-99-0	nc	42.4
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	22.0 ⁶
Pentachlorophenol	87-86-5	ca	0.399
Pentaerythritol tetranitrate (PETN)	78-11-5	nc	38.5
Perfluorooctane Sulphonic Acid (PFOS) ⁵	1763-23-1	nc	0.602
Perfluorooctanoic Acid (PFOA) ⁵	335-67-1	nc	0.401
Phenanthrene ⁵	85-01-8	nc	175
Phenol	108-95-2	nc	5770
Phosphorus, White	7723-14-0	nc	0.399
Polychlorinated Biphenyls (PCBs)	1336-36-3	ca	0.500
Propyl benzene	103-65-1	nc	656
Pyrene	129-00-0	nc	121
Selenium	7782-49-2	nc	99.8
Silver	7440-22-4	nc	94.0
Styrene	100-42-5	nc	1210
TCDD, 2,3,7,8-	1746-01-6	ca	1.19E-06
Tetrachloroethane, 1,1,1,2-	630-20-6	ca	5.72
Tetrachloroethane, 1,1,2,2-	79-34-5	ca	0.757
Tetrachloroethylene	127-18-4	nc	40.6
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	nc	39.5
Thallium (Soluble Salts)	7440-28-0	nc	0.200
Toluene	108-88-3	nc	1100
Toxaphene	8001-35-2	ca	0.153
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	nc	55000
Trichlorobenzene, 1,2,3-	87-61-6	nc	7.04
Trichlorobenzene, 1,2,4-	120-82-1	nc	3.99
Trichloroethane, 1,1,1-	71-55-6	nc	8010
Trichloroethane, 1,1,2-	79-00-5	nc	0.415
Trichloroethylene	79-01-6	nc	2.82
Trichlorofluoromethane	75-69-4	nc	1140
Trichlorophenol, 2,4,5-	95-95-4	nc	1180
Trichlorophenol, 2,4,6-	88-06-2	nc	12.0
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	nc	163

TABLE C. GROUNDWATER CLEANUP LEVELS			
Hazardous Substance	CAS Number¹	carcinogen(ca); noncarcinogen(nc); mutagen(m)²	Groundwater Cleanup Level (µg/L)³
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	nc	111
Trichloropropane, 1,2,3-	96-18-4	m	0.00747
Trimethylbenzene, 1,2,4-	95-63-6	nc	14.6
Trimethylbenzene, 1,3,5-	108-67-8	nc	116
Tri-n-butyltin	688-73-3	nc	3.73
Trinitrobenzene, 1,3,5-	99-35-4	nc	594
Trinitrotoluene, 2,4,6-	118-96-7	nc	9.81
Vanadium and Compounds	7440-62-2	nc	86.4
Vinyl Acetate	108-05-4	nc	409
Vinyl Chloride	75-01-4	ca	0.188
Xylenes	1330-20-7	nc	193
Zinc and Compounds	7440-66-6	nc	6000
PETROLEUM HYDROCARBONS			
C ₆ -C ₁₀ GRO		nc	2200
C ₁₀ -C ₂₅ DRO		nc	1500
C ₂₅ -C ₃₆ 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. "c" means carcinogenic, and "nc" means noncarcinogenic and "m" means mutagenic.
3. Except where noted, cleanup levels are calculated based on risk accounting for exposure to groundwater through ingestion, inhalation of volatiles and dermal contact.
4. The cleanup level for total chromium assumes 100% of a detected concentration is chromium VI.
5. 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) EPA's 2014 Health Effects Document for Perfluorooctanoic Acid (PFOA);
- (E) EPA's 2014 Health Effects Document for Perfluorooctane Sulfonate (PFOS);
- (F) chloromethane is a toxicity surrogate for hydrazine and methyl mercury (Kd value only); and
- (G) elemental mercury is a toxicity surrogate for mercuric chloride.

6. These levels are water solubility (S) of the hazardous substance given in *Procedures for Calculating Cleanup Levels*, adopted by reference in 18 AAC 75.340.

(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; and

(5) 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*, 21st 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 data 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;

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

(C) has gained concurrence from the affected neighboring property owner for the creation and maintenance of institutional controls.

(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	

...

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 ____)

Authority:	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