

**DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION**



**18 AAC 75**

**Oil and Other Hazardous Substances  
Pollution Control**

**June 9, 2008**

Under review by the Department of Law

**Sarah Palin  
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 - 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 (1)** [1.0] across all exposure pathways. Guidance on cumulative risk determinations is provided in the department's *Cumulative Risk Guidance*, dated **June 9, 2008**. [NOVEMBER 7, 2000] The Department's *Cumulative Risk Guidance* dated **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)(3), 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 (1)** [1.0] across all exposure pathways. Guidance on cumulative risk determinations is provided in the department's *Cumulative Risk Guidance*, adopted by reference in (g) of this section. Instead of the risk standards required by this subsection, the department may consider a risk standard consistent with the range acceptable under 40 C.F.R. 300.430, revised as of July 1, **2004** [2002], adopted by reference, based on

(1) site-specific conditions;

- (2) land use;
- (3) hazardous substance characteristics;
- (4) statutory compliance;
- (5) protection of human health, safety, and welfare, and the environment;
- (6) ability of cleanup to be implemented;
- (7) long-term and short-term effectiveness;
- (8) use of treatment technologies;
- (9) public comment; and
- (10) cost.

(Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; am 1/30/2003, Register 165; 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

18 AAC 75.340(e)(1) is amended to read:

(1) the migration to groundwater or inhalation levels in Table B1 of 18 AAC 75.341(c) or 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 *Cleanup Levels Guidance*, dated **June 9, 2008** [NOVEMBER 7, 2002], 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;

18 AAC 75.340(e)(2)(A) is amended to read:

(A) the [INGESTION-BASED] **direct contact** level in Table B1 **or the ingestion level in** Table B2;

18 AAC 75.340(e)(3) is amended to read:

(3) the **direct contact** [INGESTION] level or the inhalation level in Table B1 or **the ingestion level or the inhalation level in** Table B2 based on use of commercial or industrial exposure parameters listed in Appendix B of the *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** [INGESTION] level or inhalation level does not exceed the migration to groundwater cleanup level in Table B1 or **the alternative ingestion level or inhalation level does not exceed the migration to groundwater cleanup level in** Table B2 or 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

18 AAC 75.340(g) is amended to read:

(g) The department will [REQUIRE A RESPONSIBLE PERSON TO] develop a site-specific cleanup level for a hazardous substance not listed under 18 AAC 75.341(c) [METHODS PROVIDED UNDER (E) OR (F) OF THIS SECTION], using the equations set out in the department's *Cleanup Levels Guidance*, unless **the responsible** [THAT] 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(j)(2) is amended to read:

(2) human exposure from ingestion, **direct contact**, or inhalation of 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

18 AAC 75.340 (k) is amended to read:

(k) For a cleanup conducted under methods two and three, a chemical that is detected at one-tenth or more of the Table B1 **direct contact** [INGESTION] and inhalation cleanup levels set out in 18 AAC 75.341(c) 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 \_\_\_/\_\_\_/\_\_\_\_, 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	

18 AAC 75.341 is repealed and readopted to read:

**18 AAC 75.341. Soil cleanup levels; tables.** (a) If a responsible person uses method one for a non-Arctic zone under 18 AAC 75.340, the soil cleanup levels must be based on Table A1 in this subsection.

**TABLE A1. METHOD ONE – PETROLEUM HYDROCARBON SOIL**

**CLEANUP LEVELS IN NONARCTIC ZONES**

**(See notes to table for further requirements)**

**Part A: Determine score for each item\***

<b>1. Depth to Groundwater</b>		
Less than 5 feet	(10)	
5 feet to 15 feet	(8)	
More than 15 feet to 25 feet	(6)	
More than 25 feet to 50 feet	(4)	
More than 50 feet	(1)	
<b>2. Mean Annual Precipitation</b>		
More than 40 inches	(10)	
More than 25 inches to 40 inches	(5)	
15 inches to 25 inches	(3)	
Less than 15 inches	(1)	
<b>3. Soil Type (Unified Soil Classification)</b>		
Clean, coarse-grained soils	(10)	
Coarse-grained soils with fines	(8)	
Fine-grained soils (low organic carbon)	(3)	
Fine-grained soils (high organic carbon)	(1)	
<b>4. Potential Receptors</b>		
<b>(Select the most applicable category)</b>		
a. Public water system within 1000 feet, or private water system within 500 feet	(15)	
b. Public/private water system within 1/2 mile	(12)	
c. Public/private water system within one mile	(8)	
d. No water system within one mile	(4)	
e. Nonpotable groundwater	(1)	

<b>5. Volume of Contaminated Soil</b>	
More than 500 cubic yards	(10)
More than 100 cubic yards to 500 cubic yards	( 8)
More than 25 cubic yards to 100 cubic yards	( 5)
10 cubic yards to 25 cubic yards	( 2)
Less than 10 cubic yards	( 0)

\*The items to be scored are defined in note 1 to this table.

**Part B: Add scores from Part A to determine matrix score and cleanup level**

<b>Matrix Score for Each Category</b>	<b>Cleanup Level in mg/kg</b>		
	<b>Gasoline Range</b>	<b>Diesel Range</b>	<b>Residual Range</b>
	<b>Organics</b>	<b>Organics</b>	<b>Organics</b>
Category A: More than 40	50	100	2000
Category B: More than 26 to 40	100	200	2000
Category C: 21-26	500	1000	2000
Category D: Less than 21	1000	2000	2000

**Notes to Table A1:**

1. The following definitions for items 1 - 5 in Part A apply for purposes of using method one:

a. "depth to groundwater" means the measurement from the lowest point of the zone of soil contamination to the seasonal high groundwater table; a responsible person may not claim a lower matrix score for soil by moving contaminated soil to a higher elevation relative to the groundwater table;

b. "mean annual precipitation" is defined at 18 AAC 75.990;

c. "soil type" means the predominant Unified Soil Classification (USC) soil type between the deepest point of contamination and the seasonal high groundwater table; a

responsible person may seek to demonstrate that otherwise coarse-grained soil has an organic carbon content that might enable a lower point classification. Soil types using the USC system are further defined as shown in Figure 1:

**Figure 1**

<b>SOIL TYPE</b>	<b>UNIFIED SOIL CLASSIFICATIONS</b>
Clean coarse-grained	GW, GP, SW, SP
Coarse-grained with fines	GM, GC, SM, SC, GP-GC, SP-SM, GW-GM, SW-SM, SW-SC
Fine-grained with low organic carbon	ML, CL, HM, CH
Fine-grained with high organic carbon	OL, OH, Pt

d. for the "potential receptors" categories,

(i) "public water system" and "private water system" have the meaning given those terms in 18 AAC 80.1990;

(ii) "nonpotable" means unusable for drinking water due to a water quality condition, such as salinity, that was not caused by or that does not arise from contamination at the site;

e. "volume of contaminated soil" means the total estimated volume of soil that is contaminated above the applicable cleanup level before a responsible person begins a removal or cleanup action.

2. For the "potential receptors" categories, a responsible person shall submit a demonstration supporting the score assigned, including the results of an approved water well survey; the most conservative score must be used to determine the proximity of potential receptors; for example, if a water system is within one-quarter mile, the category "public/private water system within one mile" that would score 8 would be superseded by the category "public/private water system

within 1/2 mile" that would score 12.

3. The identity of a released refined petroleum product must be assumed to be unknown unless a responsible person demonstrates that the product is only gasoline, or only a refined nongasoline product; the department will waive the requirement that a product be identified by analysis if a responsible person demonstrates that only one type of product was stored or distributed at the site; the soil cleanup levels in Part B are based on gas chromatographic analytical measurements corresponding to a specific measured range of petroleum hydrocarbons as follows:

a. gasoline range organics: light-range petroleum products such as gasoline, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of C<sub>6</sub> to the beginning of C<sub>10</sub> and a boiling point range between approximately 60° Centigrade and 170° Centigrade;

b. diesel range organics: mid-range petroleum products such as diesel fuel, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of C<sub>10</sub> to the beginning of C<sub>25</sub> and a boiling point range between approximately 170° Centigrade and 400° Centigrade;

c. residual range organics: heavy-range petroleum products such as lubricating oils, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of C<sub>25</sub> to the beginning of C<sub>36</sub> and a boiling point range between approximately 400° Centigrade and 500° Centigrade.

4. In addition to meeting the soil cleanup levels in Part B, a responsible person shall ensure that the site meets the most stringent standards for benzene, toluene, ethylbenzene, and total xylenes for the applicable exposure pathway in Table B1 in (c) of this section.

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

**TABLE A2. METHOD ONE - PETROLEUM HYDROCARBON SOIL  
CLEANUP LEVELS IN THE ARCTIC ZONE**

PRODUCT	Cleanup Level in mg/kg		
	Diesel Range Petroleum Hydrocarbons	Gasoline Range Petroleum Hydrocarbons	Residual Range Petroleum Hydrocarbons
Gasoline	N/A	100	N/A
Diesel	200*	N/A	N/A
Unknown/Crude	200	100	N/A
Residual	N/A	N/A	2000

In this table, "N/A" means "not applicable."

\* If a responsible party demonstrates that contamination is due to a diesel spill, that levels of benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are less than 15 mg/kg, that benzene levels are less than 0.5 mg/kg, and that other site conditions are favorable, and if the department determines that a less stringent level is protective of human health, safety, and welfare, and of the environment, the department will allow a cleanup level of 500 mg/kg for diesel range petroleum hydrocarbons.

The Arctic Zone numeric cleanup levels in this table cover only contamination related to manmade pads and roads. The department will determine the cleanup levels for undisturbed tundra or other undisturbed native vegetation on a site-specific basis, depending upon whether a cleanup action would cause more severe or long-term damage than would the discharge or release alone.

(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)**

CAS Number <sup>4</sup>	Hazardous Substance	Carcinogenic (c/nc)	Arctic Zone <sup>1</sup>		Under 40 inch Zone <sup>2</sup>		Over 40 inch Zone <sup>3</sup>		Migration to Groundwater <sup>7</sup> (mg/kg)
			Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	
<b>ORGANICS</b>									
355-72-782	2-Amino-4,6-dinitrotoluene	nc	26		20		16		0.029
194-06-510	4-Amino-2,6-dinitrotoluene	nc	26		19		16		0.029
83-32-9	Acenaphthene <sup>14</sup>	nc	3800		2800		2300		180
208-96-8	Acenaphthylene <sup>14</sup>	nc	3800		2800		2300		180
67-64-1	Acetone	nc	123000	102000	91300	68600	74700	51100	88
309-00-2	Aldrin	c	0.40		0.30		0.24		0.070
120-12-7	Anthracene <sup>14</sup>	nc	27800		20600		16800		3000
71-43-2	Benzene <sup>14</sup>	c	200	17	150	11	120	8.5	0.025
56-55-3	Benzo(a)anthracene <sup>14</sup>	c	6.6		4.9		4.0		3.6
205-99-2	Benzo(b)fluoranthene <sup>14</sup>	c	6.6		4.9		4.0		12
207-08-9	Benzo(k)fluoranthene <sup>14</sup>	c	66		49		40		120
65-85-0	Benzoic acid	nc	428000		317000		259000		410
191-24-2	Benzo(g,h,i)perylene <sup>14</sup>	nc	1900		1400		1100		38700
50-32-8	Benzo(a)pyrene <sup>14</sup>	c	0.66		0.49		0.40		2.1
111-44-4	Bis(2-chloroethyl)ether	c	10	4.9	7.5	3.3	6.2	2.5	0.0022
117-81-7	Bis(2-ethylhexyl)phthalate	c	300		220		180		13
75-27-4	Bromodichloromethane	c	180	15	130	10	110	7.3	0.044
75-25-2	Bromoform	c	1400	430 <sup>12</sup>	1100	420	860	320	0.34
71-36-3	Butanol	nc	8800		6500		5300		9.8
104-51-8	n-Butylbenzene	nc	1400	42 <sup>12</sup>	1000	42 <sup>12</sup>	830	42 <sup>12</sup>	15
135-98-8	sec-Butylbenzene	nc	1400	41 <sup>12</sup>	1000	41 <sup>12</sup>	830	41 <sup>12</sup>	12
98-06-6	tert-Butylbenzene	nc	1400	70 <sup>12</sup>	1000	70 <sup>12</sup>	830	70 <sup>12</sup>	12
85-68-7	Butyl benzyl phthalate	c	3900		2900		2400		920
86-74-8	Carbazole	c	390		290		230		6.5
75-15-0	Carbon disulfide	nc	6500	250 <sup>12</sup>	4800	250 <sup>12</sup>	3900	250 <sup>12</sup>	12
56-23-5	Carbon tetrachloride	c	86	4.5	64	3.1	52	2.3	0.023
57-74-9	Chlordane	c	26		19		15		2.3
106-47-8	p-Chloroaniline	c	130		90		80		0.057

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

CAS Number <sup>4</sup>	Hazardous Substance	Carcinogenic (c/nc)	Arctic Zone <sup>1</sup>		Under 40 inch Zone <sup>2</sup>		Over 40 inch Zone <sup>3</sup>		Migration to Groundwater <sup>7</sup> (mg/kg)
			Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	
<b>ORGANICS</b>									
108-90-7	Chlorobenzene	nc	2700	200 <sup>12</sup>	2000	200 <sup>12</sup>	1700	200 <sup>12</sup>	0.63
124-48-1	Chlorodibromomethane (Dibromochloromethane)	c	130	21	99	14	81	11	0.032
75-00-3	Chloroethane	c	3900	53	2900	36	2300	27	1.0
67-66-3	Chloroform	c	1400	4.7	1000	3.2	830	2.4	0.46
91-58-7	2-Chloronaphthalene	nc	6300		4700		3800		120
95-57-8	2-Chlorophenol	nc	680	3800	510	2500	410	1900	1.5
218-01-9	Chrysene <sup>14</sup>	c	660		490		400		360
72-54-8	DDD	c	41		30		25		7.2
72-55-9	DDE	c	29		21		18		5.1
50-29-3	DDT	c	29		21		18		7.3
53-70-3	Dibenzo(a,h)anthracene <sup>14</sup>	c	0.66		0.49		0.40		4.0
132-64-9	Dibenzofuran	nc	270		200		170		11
84-74-2	Di-n-butyl phthalate	nc	10700		7900		6500		80
117-84-0	Di-n-octyl phthalate	nc	4200		3100		2500		3800
94-75-7	2,4-Dichlororophenoxy acetic acid (2,4-D)	nc	1200		860		710		0.21
95-50-1	1,2-Dichlorobenzene	nc	12300	45 <sup>12</sup>	9100	45 <sup>12</sup>	7500	45 <sup>12</sup>	5.1
541-73-1	1,3-Dichlorobenzene	nc	12300	69 <sup>12</sup>	9100	69 <sup>12</sup>	7500	69 <sup>12</sup>	28
106-46-7	1,4-Dichlorobenzene	c	470	44	350	30	280	22	0.64
91-94-1	3,3-Dichlorobenzidine	c	15		11		9.2		0.19
75-71-8	Dichlorodifluoromethane	nc	27400	570	20300	380	16600	280	140
75-34-3	1,1-Dichloroethane	c	27400	900 <sup>12</sup>	20300	900 <sup>12</sup>	16600	900 <sup>12</sup>	25
107-06-2	1,2-Dichloroethane	c	120	7.1	91	4.8	75	3.6	0.016
75-35-4	1,1-Dichloroethylene	c	19	1.3	14	0.85	11	0.63	0.030
156-59-2	<i>cis</i> -1,2-Dichloroethylene	nc	1400	190	1000	130	830	95	0.24
156-60-5	<i>trans</i> -1,2-Dichloroethylene	nc	2700	240	2000	160	1700	120	0.37
120-83-2	2,4-Dichlorophenol	nc	310		230		190		1.3
78-87-5	1,2-Dichloropropane	c	160	7.9	120	5.3	100	4.0	0.018
542-75-6	1,3-Dichloropropene	c	110	40	83	27	68	20	0.033

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

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			Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	
<b>ORGANICS</b>									
60-57-1	Dieldrin	c	0.43		0.32		0.26		0.0076
84-66-2	Diethyl phthalate	nc	84000		61900		50600		130
105-67-9	2,4-Dimethylphenol	nc	1800		1300		1100		8.8
131-11-3	Dimethyl phthalate	nc	>10 <sup>6</sup>		773000		633000		1100
528-29-0	1,2-Dinitrobenzene	nc	11		7.8		6.4		0.020
99-65-0	1,3-Dinitrobenzene	nc	10		7.1		5.8		0.020
100-25-4	1,4-Dinitrobenzene	nc	8.8		6.5		5.3		0.020
51-28-5	2,4-Dinitrophenol	nc	210		160		130		0.54
121-14-2	2,4-Dinitrotoluene	nc	12		8.8		7.2		0.0093
606-20-2	2,6-Dinitrotoulene	c	12		8.9		7.3		0.0094
123-91-1	1,4-Dioxane	c	700		540		440		0.21
1746-01-6	2,3,7,8-TCDD (Dioxin) <sup>8</sup>	c	0.000063		0.000047		0.000038		0.000058
122-39-4	Diphenylamine	nc	2200		1600		1300		25
115-29-7	Endosulfan	nc	820		610		500		64
72-20-8	Endrin	nc	2.7		2.0		1.7		0.29
100-41-4	Ethylbenzene <sup>14</sup>	c	13700	110 <sup>12</sup>	10100	110	8300	81	6.9
106-93-4	Ethylene dibromide (1,2-Dibromoethane)	c	5.6	0.89	4.2	0.60	3.4	0.44	0.00016
107-21-1	Ethylene glycol	nc	175000		130000		106000		190
206-44-0	Fluoranthene <sup>14</sup>	nc	2500		1900		1500		1400
86-73-7	Fluorene <sup>14</sup>	nc	3200		2300		1900		220
76-44-8	Heptachlor	c	1.7		1.3		1.0		0.28
1024-57-3	Heptachlor epoxide	c	0.86		0.63		0.52		0.014
118-74-1	Hexachlorobenzene	c	4.3	2.2	3.2	1.5	2.6	1.1	0.047
87-68-3	Hexachloro-1,3-butadiene	c	18	3.8 <sup>12</sup>	13	3.8 <sup>12</sup>	11	3.8 <sup>12</sup>	0.12
319-84-6	alpha-Hexachlorocyclohexane	c	1.6		1.2		1.0		0.0064
319-85-7	beta-Hexachlorocyclohexane	c	5.5		4.0		3.3		0.022
58-89-9	gamma-Hexachlorocyclohexane (Lindane)	c	7.6		5.6		4.6		0.0095
77-47-4	Hexachlorocyclopentadiene	nc	530	3.0	390	2.0	320	1.5	1.3

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

CAS Number <sup>4</sup>	Hazardous Substance	Carcinogenic (c/nc)	Arctic Zone <sup>1</sup>		Under 40 inch Zone <sup>2</sup>		Over 40 inch Zone <sup>3</sup>		Migration to Groundwater <sup>7</sup> (mg/kg)
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<b>ORGANICS</b>									
67-72-1	Hexachloroethane	c	88	250	65	170	53	130	0.21
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	c	97		72		59		0.040
302-01-2	Hydrazine	c	2.3	1.5	1.7	0.98	1.4	0.73	0.00080
193-39-5	Indeno(1,2,3-c,d)pyrene <sup>14</sup>	c	6.6		4.9		4.0		41
78-59-1	Isophorone	c	7200		5300		4400		3.1
98-82-8	Isopropylbenzene (Cumene)	nc	13700	62 <sup>12</sup>	10100	62 <sup>12</sup>	8300	62 <sup>12</sup>	51
72-43-5	Methoxychlor	nc	440		320		270		23
74-83-9	Methyl bromide (Bromomethane)	nc	190	21	140	14	120	11	0.16
74-87-3	Methyl chloride (Chloromethane)	c	860	37	640	25	520	19	0.21
78-93-3	Methyl ethyl ketone (MEK)	nc	82100	23300 <sup>12</sup>	60800	23300 <sup>12</sup>	49800	23300 <sup>12</sup>	59
108-10-1	Methyl isobutyl ketone (MIBK)	nc	11000	2100 <sup>12</sup>	8100	2100 <sup>12</sup>	6600	2100 <sup>12</sup>	8.1
74-95-3	Methylene bromide	nc	1400	560	1000	370	830	280	1.1
75-09-2	Methylene chloride	c	1500	240	1100	160	910	120	0.016
22967-92-6	Mercury (Methyl)	nc	10		7.7		6.3		0.012
90-12-0	1-Methylnaphthalene	nc	380	1100	280	760	230	560	6.2
91-57-6	2-Methylnaphthalene	nc	380	1100	280	750	230	560	6.1
95-48-7	2-Methylphenol (o-cresol)	c	4400		3200		2700		15
108-39-4	3-Methylphenol (m-cresol)	c	4400		3200		2700		15
106-44-5	4-Methylphenol (p-cresol)	c	480		350		290		1.5
1634-04-4	Methyl <i>tert</i> -butyl ether (MTBE)	c	6200	440	4600	290	3800	220	1.3
91-20-3	Naphthalene <sup>14</sup>	nc	1900	42	1400	28	1100	21	20
98-95-3	Nitrobenzene	nc	68	180	51	120	41	90	0.094
55-63-0	Nitroglycerin	c	400		300		240		0.22
556-88-7	Nitroguanidine	nc	8800		6500		5300		11
62-75-9	n-Nitrosodimethylamine	c	0.22	0.28	0.16	0.19	0.13	0.14	0.000053
86-30-6	n-Nitrosodiphenylamine	c	1000		750		610		15
621-64-7	n-Nitroso-di-n-propylamine	c	0.71		0.52		0.43		0.0011
88-72-2	2-Nitrotoluene	c	35		26		21		0.025

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

CAS Number <sup>4</sup>	Hazardous Substance	Carcinogenic (c/nc)	Arctic Zone <sup>1</sup>		Under 40 inch Zone <sup>2</sup>		Over 40 inch Zone <sup>3</sup>		Migration to Groundwater <sup>7</sup> (mg/kg)
			Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	
<b>ORGANICS</b>									
99-08-1	3-Nitrotoluene	c	2000		1500		1200		4.9
99-99-0	4-Nitrotoluene	c	470		350		290		0.34
103-65-1	n-Propylbenzene	nc	1400	42 <sup>12</sup>	1000	42 <sup>12</sup>	830	42 <sup>12</sup>	15
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	nc	6200		4600		3700		49
87-86-5	Pentachlorophenol	c	52		39		32		0.047
85-01-8	Phenanthrene <sup>14</sup>	nc	27800		20600		16800		3000
108-95-2	Phenol	nc	31300		23200		19000		68
133-63-63	Polychlorinated biphenyls (PCBs) <sup>9</sup>	c	1		1		1		
129-00-0	Pyrene <sup>14</sup>	nc	1900		1400		1100		1000
100-42-5	Styrene	nc	27400	200 <sup>12</sup>	20300	200 <sup>12</sup>	16600	200 <sup>12</sup>	0.96
79-34-5	1,1,2,2-Tetrachloroethane	c	56	8.1	42	5.5	34	4.1	0.017
127-18-4	Tetrachloroethylene (PCE)	c	21	15	15	10	13	7.3	0.024
108-88-3	Toluene <sup>14</sup>	nc	11000	220 <sup>12</sup>	8100	220 <sup>12</sup>	6600	220 <sup>12</sup>	6.5
8001-35-2	Toxaphene	c	10		7.5		6.2		3.9
688-73-3	Tributyltin	nc	26		19		16		5500
120-82-1	1,2,4-Trichlorobenzene	nc	1400	41 <sup>12</sup>	1000	41 <sup>12</sup>	830	41 <sup>12</sup>	0.85
71-55-6	1,1,1-Trichloroethane	nc	27400	360 <sup>12</sup>	20300	360 <sup>12</sup>	16600	360 <sup>12</sup>	0.82
79-00-5	1,1,2-Trichloroethane	c	200	17	150	11	120	8.6	0.018
79-01-6	Trichloroethylene (TCE)	c	28	0.85	21	0.57	17	0.42	0.020
95-95-4	2,4,5-Trichlorophenol	nc	8800		6500		5300		67
88-06-2	2,4,6-Trichlorophenol	c	620	6100	460	4100	380	3000	1.4
93-72-1	2-(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	nc	700		520		430		0.19
96-18-4	1,2,3-Trichloropropane	c	1.6	0.26	1.2	0.17	0.97	0.13	0.00053
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	nc	>10 <sup>6</sup>	750 <sup>12</sup>	>10 <sup>6</sup>	750 <sup>12</sup>	>10 <sup>6</sup>	750 <sup>12</sup>	750 <sup>12</sup>
75-69-4	Trichlorofluoromethane (Freon-11)	nc	41100	990 <sup>12</sup>	30400	990 <sup>12</sup>	24900	820	86
95-63-6	1,2,4-Trimethylbenzene	nc	6800	49 <sup>12</sup>	5100	49	4100	37	23
108-67-8	1,3,5-Trimethylbenzene	nc	6800	42 <sup>12</sup>	5100	42 <sup>12</sup>	4100	32	23
99-35-4	1,3,5-Trinitrobenzene	nc	3800		2800		2300		19

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

CAS Number <sup>4</sup>	Hazardous Substance	Carcinogenic (c/nc)	Arctic Zone <sup>1</sup>		Under 40 inch Zone <sup>2</sup>		Over 40 inch Zone <sup>3</sup>		Migration to Groundwater <sup>7</sup> (mg/kg)
			Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	Direct Contact (mg/kg) <sup>5</sup>	Outdoor Inhalation <sup>6</sup> (mg/kg)	
<b>ORGANICS</b>									
479-45-8	2,4,6-Trinitrophenylmethylnitramine (Tetryl)	nc	550		400		330		4.5
118-96-7	2,4,6-Trinitrotoluene (TNT)	c	60		44		36		0.49
108-05-4	Vinyl acetate	nc	137000	2200 <sup>12</sup>	101000	1500	83000	1100	100
75-01-4	Vinyl chloride (Chloroethene)	c	7.5	6.4	5.5	4.3	4.5	3.2	0.0085
1330-20-7	Xylenes (total) <sup>14</sup>	nc	27400	63 <sup>12</sup>	20300	63 <sup>12</sup>	16600	63 <sup>12</sup>	63 <sup>12</sup>
<b>INORGANICS</b>									
7440-36-0	Antimony	nc	55		41		33		3.6
7440-38-2	Arsenic <sup>15</sup>	c	6.1		4.5		3.7		3.9
7440-39-3	Barium	nc	27400		20300		16600		1100
7440-41-7	Beryllium	c	270		200		170		42
7440-43-9	Cadmium	c	110		79		65		5.0
7440-47-3	Chromium (Total)	nc	410		300		250		25
16065-83-1	Chromium +3	nc	205000		152000		124000		>10 <sup>6</sup>
18540-29-9	Chromium +6	nc	410		300		250		25
7440-50-8	Copper	nc	5500		4100		3300		460
57-12-5	Cyanide <sup>10</sup>	nc	2700		2000		1700		27
7439-92-1	Lead <sup>11</sup>	c	400		400		400		
7439-97-6	Mercury	nc	41	26	30	18	25	13	1.4
7440-02-0	Nickel	nc	2700		2000		1700		86
7790-98-9	Perchlorate	nc	96		71		58		0.067
7782-49-2	Selenium	nc	680		510		410		3.4
7440-22-4	Silver	nc	680		510		410		11.2
7440-28-0	Thallium	nc	11		8.1		6.6		1.9
7440-62-2	Vanadium	nc	960		710		580		3400
7723-14-0	White phosphorus	nc	2.7		2.0		1.7		0.036
7440-66-6	Zinc	nc	41100		30400		24900		4100

NOTES TO TABLE B1 FOLLOW TABLE B2 IN (d) OF THIS SECTION.

<b>TABLE B2. METHOD TWO - PETROLEUM HYDROCARBON SOIL CLEANUP LEVELS</b>										
<b>Petroleum Hydrocarbon Range</b>	<b>Arctic Zone mg/kg</b>			<b>Under 40 Inch Zone</b>			<b>Over 40 Inch Zone</b>			<b>Maximum Allowable Concentrations<sup>13</sup> mg/kg</b>
	Ingestion <sup>16</sup> (mg/kg)	Inhalation (mg/kg)	Migration to Groundwater (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Migration to groundwater (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Migration to Groundwater (mg/kg)	
<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 Table 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 *Cleanup Levels Guidance*, 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 direct contact, inhalation, or migration to groundwater.

In Table B1, a blank space means not available or not applicable.

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. "direct contact" means exposure through both incidental ingestion of soil and through dermal absorption of the contaminant from soil.
6. "outdoor inhalation" means a potential pathway of exposure to volatile organic hazardous substances in the soil through volatilization and migration to outdoor air.
7. "migration to groundwater" means the potential for hazardous substances to leach to

groundwater where they may result in a completed human exposure pathway through direct ingestion of contaminants at or above 18 AAC 75.345(b)(1) Table C levels. The migration to groundwater pathway may not be applicable on a site-specific basis, particularly for sites located within the Arctic Zone based on a demonstration that the site is underlain by continuous permafrost. Soil cleanup levels protective of migration to surface water must be determined on a site-specific basis.

8. Cleanup level for 2,3,7,8-Tetrachlorodibenzo-*p*-Dioxin. All polychlorinated dibenzo-*p*-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) congeners cleanup levels must be determined on a site-specific basis.

9. For unrestricted land use, PCBs in soil shall be cleaned up to one (1) mg/kg or less, unless the department determines that a different cleanup level is necessary as provided in 18 AAC 75.340(i), as, for example, in a subsistence food gathering area, protection of ecological receptors, or to ensure contaminant migration to groundwater does not occur. 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 9, “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.

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

11. Lead cleanup levels must be determined on a site-specific basis, 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<sub>sat</sub>) using the equations set out in the *Cleanup Levels Guidance*, adopted by reference in 18 AAC 75.340. Refer to the *Cumulative Risk Guidance*, adopted by reference in 18 AAC 75.325(g), for inhalation risk screening levels.

13. 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).

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, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(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 of Alaska, 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 in soil through direct consumption of the soil.

(Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; 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	

18 AAC 75.345(b) is repealed and readopted to read:

(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**

<b>CAS Number</b>	<b>Hazardous Substance</b>	<b>Carcinogenic (c/nc)</b>	<b>Groundwater (mg/L)</b>
<b>ORGANICS</b>			
355-72-782	2-Amino-4,6-dinitrotoluene	nc	0.0073
194-06-510	4-Amino-2,6-dinitrotoluene	nc	0.0073
83-32-9	Acenaphthene	nc	2.2
208-96-8	Acenaphthylene	nc	2.2
67-64-1	Acetone	nc	33
309-00-2	Aldrin	c	0.00005
120-12-7	Anthracene	nc	11
71-43-2	Benzene	c	0.005
56-55-3	Benzo(a)anthracene	c	0.0012
205-99-2	Benzo(b)fluoranthene	c	0.0012
207-08-9	Benzo(k)fluoranthene	c	0.012
65-85-0	Benzoic acid	nc	150
191-24-2	Benzo(g,h,i)perylene	nc	1.1
50-32-8	Benzo(a)pyrene	c	0.0002
111-44-4	Bis(2-chloroethyl)ether	c	0.00077
117-81-7	Bis(2-ethylhexyl)phthalate	c	0.006
75-27-4	Bromodichloromethane	c	0.014
75-25-2	Bromoform	c	0.11
71-36-3	Butanol	nc	3.7
104-51-8	n-Butylbenzene	nc	0.37
135-98-8	sec-Butylbenzene	nc	0.37
98-06-6	tert-Butylbenzene	nc	0.37
85-68-7	Butyl benzyl phthalate	c	7.3
86-74-8	Carbazole	c	0.043
75-15-0	Carbon disulfide	nc	3.7
56-23-5	Carbon tetrachloride	c	0.005
57-74-9	Chlordane	c	0.002
106-47-8	p-Chloroaniline	c	0.016
108-90-7	Chlorobenzene	nc	0.1
124-48-1	Chlorodibromomethane (Dibromochloromethane)	c	0.010
75-00-3	Chloroethane	c	0.29
67-66-3	Chloroform	c	0.14
91-58-7	2-Chloronaphthalene	nc	2.9
95-57-8	2-Chlorophenol	nc	0.18
218-01-9	Chrysene	c	0.12
72-54-8	DDD	c	0.0035
72-55-9	DDE	c	0.0025

**TABLE C. GROUNDWATER CLEANUP LEVELS**

CAS Number	Hazardous Substance	Carcinogenic (c/nc)	Groundwater (mg/L)
<b>ORGANICS</b>			
50-29-3	DDT	c	0.0025
53-70-3	Dibenzo(a,h)anthracene	c	0.00012
132-64-9	Dibenzofuran	nc	0.073
84-74-2	Di-n-butyl phthalate	nc	3.7
117-84-0	Di-n-octyl phthalate	nc	1.5
94-75-7	2,4-Dichlorophenoxy acetic acid (2,4-D)	nc	0.07
95-50-1	1,2-Dichlorobenzene	nc	0.6
541-73-1	1,3-Dichlorobenzene	nc	3.3
106-46-7	1,4-Dichlorobenzene	c	0.075
91-94-1	3,3-Dichlorobenzidine	c	0.0019
75-71-8	Dichlorodifluoromethane	nc	7.3
75-34-3	1,1-Dichloroethane	c	7.3
107-06-2	1,2-Dichloroethane	c	0.005
75-35-4	1,1-Dichloroethylene	c	0.007
156-59-2	<i>cis</i> -1,2-Dichloroethylene	nc	0.07
156-60-5	<i>trans</i> -1,2-Dichloroethylene	nc	0.10
120-83-2	2,4-Dichlorophenol	nc	0.11
78-87-5	1,2-Dichloropropane	c	0.005
542-75-6	1,3-Dichloropropene	c	0.0085
60-57-1	Dieldrin	c	0.000053
84-66-2	Diethyl phthalate	nc	29
105-67-9	2,4-Dimethylphenol	nc	0.73
131-11-3	Dimethyl phthalate	nc	370
528-29-0	1,2-Dinitrobenzene	nc	0.0037
99-65-0	1,3-Dinitrobenzene	nc	0.0037
100-25-4	1,4-Dinitrobenzene	nc	0.0037
51-28-5	2,4-Dinitrophenol	nc	0.073
121-14-2	2,4-Dinitrotoluene	nc	0.0013
606-20-2	2,6-Dinitrotoulene	c	0.0013
123-91-1	1,4-Dioxane	c	0.077
1746-01-6	2,3,7,8-TCDD (Dioxin)	c	0.000000030
122-39-4	Diphenylamine	nc	0.91
115-29-7	Endosulfan	nc	0.22
72-20-8	Endrin	nc	0.002
100-41-4	Ethylbenzene	c	0.7
106-93-4	Ethylene dibromide (1,2-Dibromoethane)	c	0.00005
107-21-1	Ethylene glycol	nc	73
206-44-0	Fluoranthene	nc	1.5

**TABLE C. GROUNDWATER CLEANUP LEVELS**

CAS Number	Hazardous Substance	Carcinogenic (c/nc)	Groundwater (mg/L)
<b>ORGANICS</b>			
86-73-7	Fluorene	nc	1.5
76-44-8	Heptachlor	c	0.0004
1024-57-3	Heptachlor epoxide	c	0.0002
118-74-1	Hexachlorobenzene	c	0.001
87-68-3	Hexachloro-1,3-butadiene	c	0.0073
319-84-6	alpha-Hexachlorocyclohexane	c	0.00014
319-85-7	beta-Hexachlorocyclohexane	c	0.00047
58-89-9	gamma-Hexachlorocyclohexane (Lindane)	c	0.0002
77-47-4	Hexachlorocyclopentadiene	nc	0.05
67-72-1	Hexachloroethane	c	0.04
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	c	0.0077
302-01-2	Hydrazine	c	0.00028
193-39-5	Indeno(1,2,3-c,d)pyrene	c	0.0012
78-59-1	Isophorone	c	0.90
98-82-8	Isopropylbenzene (Cumene)	nc	3.7
72-43-5	Methoxychlor	nc	0.04
74-83-9	Methyl bromide (Bromomethane)	nc	0.051
74-87-3	Methyl chloride (Chloromethane)	c	0.066
78-93-3	Methyl ethyl ketone (MEK)	nc	22
108-10-1	Methyl isobutyl ketone (MIBK)	nc	2.9
74-95-3	Methylene bromide	nc	0.37
75-09-2	Methylene chloride	c	0.005
22967-92-6	Mercury (Methyl)	nc	0.0037
90-12-0	1-Methylnaphthalene	nc	0.15
91-57-6	2-Methylnaphthalene	nc	0.15
95-48-7	2-Methylphenol (o-cresol)	c	1.8
108-39-4	3-Methylphenol (m-cresol)	c	1.8
106-44-5	4-Methylphenol (p-cresol)	c	0.18
1634-04-4	Methyl <i>tert</i> -butyl ether (MTBE)	c	0.47
91-20-3	Naphthalene	nc	0.73
98-95-3	Nitrobenzene	nc	0.018
55-63-0	Nitroglycerin	c	0.050
556-88-7	Nitroguanidine	nc	3.7
62-75-9	n-Nitrosodimethylamine	c	0.000017
86-30-6	n-Nitrosodiphenylamine	c	0.17
621-64-7	n-Nitroso-di-n-propylamine	c	0.00012
88-72-2	2-Nitrotoluene	c	0.0037
99-08-1	3-Nitrotoluene	c	0.73

**TABLE C. GROUNDWATER CLEANUP LEVELS**

<b>CAS Number</b>	<b>Hazardous Substance</b>	<b>Carcinogenic (c/nc)</b>	<b>Groundwater (mg/L)</b>
<b>ORGANICS</b>			
99-99-0	4-Nitrotoluene	c	0.050
103-65-1	n-Propylbenzene	nc	0.37
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	nc	1.8
87-86-5	Pentachlorophenol	c	0.001
85-01-8	Phenanthrene	nc	11
108-95-2	Phenol	nc	11
133-63-63	Polychlorinated biphenyls (PCBs)	c	0.0005
129-00-0	Pyrene	nc	1.1
100-42-5	Styrene	nc	0.1
79-34-5	1,1,2,2-Tetrachloroethane	c	0.0043
127-18-4	Tetrachloroethylene (PCE)	c	0.005
108-88-3	Toluene	nc	1.0
8001-35-2	Toxaphene	c	0.003
688-73-3	Tributyltin	nc	0.011
120-82-1	1,2,4-Trichlorobenzene	nc	0.07
71-55-6	1,1,1-Trichloroethane	nc	0.2
79-00-5	1,1,2-Trichloroethane	c	0.005
79-01-6	Trichloroethylene (TCE)	c	0.005
95-95-4	2,4,5-Trichlorophenol	nc	3.7
88-06-2	2,4,6-Trichlorophenol	c	0.077
93-72-1	2-(2,4,5-Trichlorophenoxy) Propionic Acid (2,4,5-TP)	nc	0.05
96-18-4	1,2,3-Trichloropropane	c	0.00012
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	nc	1100
75-69-4	Trichlorofluoromethane (Freon-11)	nc	11
95-63-6	1,2,4-Trimethylbenzene	nc	1.8
108-67-8	1,3,5-Trimethylbenzene	nc	1.8
99-35-4	1,3,5-Trinitrobenzene	nc	1.1
479-45-8	2,4,6-Trinitrophenylmethylnitramine (Tetryl)	nc	0.15
118-96-7	2,4,6-Trinitrotoluene (TNT)	c	0.018
108-05-4	Vinyl acetate	nc	37
75-01-4	Vinyl chloride (Chloroethene)	c	0.002
1330-20-7	Xylenes (total)	nc	10
<b>INORGANICS</b>			
7440-36-0	Antimony	nc	0.006
7440-38-2	Arsenic	c	0.010
7440-39-3	Barium	nc	2.0
7440-41-7	Beryllium	c	0.004
7440-43-9	Cadmium	c	0.005

**TABLE C. GROUNDWATER CLEANUP LEVELS**

<b>CAS Number</b>	<b>Hazardous Substance</b>	<b>Carcinogenic (c/nc)</b>	<b>Groundwater (mg/L)</b>
<b>INORGANICS</b>			
7440-47-3	Chromium (Total)	nc	0.10
16065-83-1	Chromium +3	nc	55
18540-29-9	Chromium +6	nc	0.10
7440-50-8	Copper	nc	1.0
57-12-5	Cyanide	nc	0.20
7439-92-1	Lead	c	0.015
7439-97-6	Mercury	nc	0.002
7440-02-0	Nickel	nc	0.10
7790-98-9	Perchlorate	nc	0.026
7782-49-2	Selenium	nc	0.05
7440-22-4	Silver	nc	0.10
7440-28-0	Thallium	nc	0.002
7440-62-2	Vanadium	nc	0.26
7723-14-0	White phosphorus	nc	0.00073
7440-66-6	Zinc	nc	5.0
<b>PETROLEUM HYDROCARBONS</b>			
	C <sub>6</sub> -C <sub>10</sub> GRO	nc	2.2
	C <sub>10</sub> -C <sub>25</sub> DRO	nc	1.5
	C <sub>25</sub> -C <sub>36</sub> RRO	nc	1.1

(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.

(c) The department will require 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, and

(1) 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(a)(2);

(2) groundwater hazardous substance concentrations complying with the secondary maximum contaminant levels in 18 AAC 80.300 for actual or likely drinking water supplies; and

(3) 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> [18<sup>th</sup>] edition, American Public Health Association (2005) [(1992)], 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.

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

<b>Authority:</b>	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 46.04.020	AS 46.09.020
	AS 46.03.740		

**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. *Recommended Practices for Monitoring Well Design, Installation, and Decommissioning*, adopted by reference in this section, may be viewed at, or requested from, the department's Anchorage, Fairbanks, Juneau, and Soldotna offices.

18 AAC 75.360(11)(G)(vi) is amended to read:

(vi) a demonstration that the contaminated zone will be compacted to 95 percent or more of the maximum density as specified in American Society for Testing and Materials (ASTM) D 1557- **07** [91], *Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort*, **ASTM International** [UPDATED 2007] and adopted by reference, or ASTM D 4253-**00** [93], *Standard Test Methods for Maximum Index Density and Unit Weight of Solids Using a Vibratory Table*, **ASTM International** updated **2006** [FEBRUARY 1993] and adopted by reference;

(Eff. 1/22/99, Register 149; 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

18 AAC 75.370(a)(4) is repealed and readopted to read:

(4) place petroleum-contaminated soil on a liner that meets the minimum specifications for the testing methods set out in Table D of this section;

**TABLE D. BOTTOM LINER SPECIFICATIONS**  
**Short-term storage of petroleum-contaminated soil (less than 180 days)**

<b>Method</b>	<b>Coated Fabric</b>	<b>Extruded Fabric</b>
Cold crack (ASTM D2136-02) (2007)	-60° F	-60° F
Black carbon content (ASTM D1603-06)	2% or greater	2% or greater
Tensile strength (ASTM D751-06)	125 lbs (warp)	N/A
Mullen burst (ASTM D751-06)	250 psi	N/A
One inch tensile strength (ASTM D882-02)	N/A	25 lbs (warp)
One inch elongation MD (machine direction)	N/A	550%
Nominal thickness	10 mil	10 mil
Oil resistance (ASTM D471-06)	No signs of deterioration and more than 80% retention of tensile and seam strength after immersion for 30 days at 73° F.	No signs of deterioration and more than 80% retention of tensile and seam strength after immersion for 30 days at 73° F.

**Long-term storage of petroleum-contaminated soil (180 days to two years)**

Cold crack (ASTM D2136-02) (2007)	-60° F	-60° F
Black carbon content (ASTM D1603-06)	2% or greater	2% or greater
Tensile strength (ASTM D751-06)	300 lbs (warp)	N/A
Mullen burst (ASTM D751-06)	500 psi	N/A
One inch tensile strength (ASTM D882-02)	N/A	45 lbs (warp)
One inch elongation MD (machine direction)	N/A	625%
Nominal thickness	20 mil	20 mil
Oil resistance (ASTM D471-06)	No signs of deterioration and more than 80% retention of tensile and seam strength after immersion for 30 days at 73° F.	No signs of deterioration and more than 80% retention of tensile and seam strength after immersion for 30 days at 73° F.

The American Society for Testing and Materials (ASTM) methods referred to in this table are adopted by reference. "N/A" means not applicable.

(Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; 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 75.375(f) is amended to read:

(f) If the concentrations of all residual hazardous substances remaining at the site are subsequently determined to be below **the levels that allow for unrestricted use.** [THE APPLICABLE CLEANUP LEVELS] the department will approve  
[, AT THE OWNER’S REQUEST,] elimination of the institutional control.

(Eff. 1/22/99, Register 149; am \_\_/\_\_/\_\_\_\_, Register\_\_\_\_)

**Authority:** AS 46.03.020 AS 46.03.745 AS 46.04.110  
AS 46.03.050 AS 46.04.020 AS 46.09.060  
AS 46.03.710 AS 46.04.070 AS 46.09.070  
AS 46.03.740

18 AAC 75.380(b)(9)(I) is amended to read:

(I) confirmation that any hazardous waste generated was stored, treated, or disposed of in compliance with 42 U.S.C. 6901 - 6992k (Solid Waste Disposal Act, as amended by Resource Conservation Recovery Act), as amended through **January 6, 2003** [OCTOBER 1, 1998] and adopted by reference; and

18 AAC 75.380(b) is amended by adding a new subsection to read:

(11) cumulative risk calculations.

(Eff. 1/22/99, Register 149; 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 46.04.020 AS 46.09.020  
AS 46.03.740

18 AAC 75.495(a)(7) is amended to read:

(7) **Western Alaska Region:** that area north of the area described in (6) of this subsection, encompassed by the boundaries of the southernmost boundary of the Bering Straits Regional Corporation, and **Iditarod and Kuspuk** Regional Educational Attendance Areas [11 and 5], including adjacent shorelines and state waters, and having as its seaward boundary a line drawn in such a manner that each point on it is 200 nautical miles from the baseline from which the territorial sea is measured;

(Eff. 5/14/92, Register 122; am 11/27/2002, Register 164 am; \_\_/\_\_/\_\_\_\_, Register\_\_\_\_)

**Authority:** AS 46.03.020 AS 46.04.070 AS 46.04.210

18 AAC 75.990 (12)(B) is amended to read:

(B) for human health purposes, a substance that meets the criteria of **the descriptors “Carcinogenic to Humans” or “Likely to be Carcinogenic to Humans” according to EPA’s Guidelines for Carcinogen Risk Assessment, EPA/630/P-03/001F (March 2005), adopted by reference.** [A GROUP A OR GROUP B CARCINOGEN ACCORDING TO EPA’S *GUIDELINES FOR CARCINOGEN RISK ASSESSMENT*, 51 FED. REG. 33992, 33999 - 34000 (SEPT. 24, 1986), ADOPTED BY REFERENCE.]

18 AAC 75.990 (100) is amended to read:

(100) “qualified person” means a person who actively practices environmental science or engineering, geology, physical science, hydrology, or a related field and who has the following minimum education and experience:

(A) a bachelor's degree or equivalent from a nationally or internationally accredited postsecondary institution in environmental science or engineering, geology, hydrology, physical science, or a related field; for purposes of this subparagraph, “equivalent” means at least 128 semester hours, 168 trimester hours, or 192 quarter hours at an accredited postsecondary institution, with at least 18 percent of those hours in a science major and at least 13 percent of those hours in upper division-level courses; and

(B) at least one year of professional experience in **contaminated site characterization and cleanup activities**, [ENVIRONMENTAL SCIENCE OR ENGINEERING, GEOLOGY, PHYSICAL SCIENCE, HYDROLOGY, OR A RELATED FIELD] obtained after the degree in (A) of this paragraph was obtained; or

(C) **at least five years of professional experience in contaminated site characterization and cleanup activities under the direct supervision of a qualified person.**

18 AAC 75.990 (109) is amended to read:

(109) “risk assessment” **means a determination of potential health effects including effects of contaminant exposure through inhalation, ingestion, dermal absorption, and other means, and the assessment of risk to human health and the environment from contaminants remaining in the land, air, or water as a result of a release;** [HAS THE MEANING GIVEN IN AS 46.03.450;]

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 \_\_\_\_/\_\_\_\_/\_\_\_\_, Register\_\_\_\_)

<b>Authority:</b>	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
	AS 46.03.755	AS 46.04.055	