

Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007

The proposed revisions to the Oil and Other Hazardous Substances Pollution Control regulations represent the first phase of a two-phased regulatory revision project to improve clarity, flexibility, and scientific defensibility. The primary component of the first phase is a significant update to the cleanup level tables based on new science. The second phase, proposed for adoption in late calendar year 2008 or early 2009, will merge the cleanup requirements found in the 18 AAC 78 Underground Storage Tank regulations with the 18 AAC 75 site cleanup rules.

A detailed summary of the proposed phase one revisions is provided in the table below.

Citation	Description
Section 335 – Site Characterization	
325(c)(2)	<p>The permitted solid waste storage or disposal facility exemption has been repealed. Soil and groundwater cleanup levels at 18 AAC 75.341 and 18 AAC 75.345 will apply to a permitted or non-permitted solid waste facility undergoing excavation if oil or hazardous substances are encountered.</p> <p>The references to 18 AAC 62 and 42 U.S.C. 6901- 6992k (Solid Waste Disposal Act, as amended by the Resource Conservation Recovery Act) remain in effect.</p>
325(g)	<p>The cumulative non-cancer hazard index (HI) has been changed to one significant figure (from 1.0 to 1) to be consistent with EPA and DEC guidance. The uncertainty associated with risk assessments is not proportional to a hazard index of one significant figure beyond the decimal point.</p> <p>The addition of the “does not equal or exceed” text in this section accounts for potential rounding disparities. For example, a calculated cumulative risk HI may equal 1.49. Rounded to one significant figure this number becomes 1. Consistent with current policy, this HI would no longer be acceptable under the proposed revision</p> <p>Rounding of significant figures during cumulative risk calculations is discussed in the updated <i>Cumulative Risk Guidance</i>, adopted by reference under 18 AAC 75.</p>
325(h)	<p>The non-cancer hazard risk number has been changed to one significant figure, as described above.</p> <p>The 40 C.F.R. 300.430 citation has been updated.</p>
325(k)	The ADF&G and ADNR statutory citations have been updated.

Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007

Citation	Description
340(e)(1)	The <i>Cleanup Levels Guidance</i> , adopted by reference, has been updated. Ingestion was changed to direct contact.
340 (e)(2)(A)	Ingestion was changed to direct contact.
340 (e)(3)	Ingestion was changed to direct contact.
340(g)	Site-specific cleanup levels for a hazardous substance not listed in regulation will be developed by the department rather than the responsible person. The purpose of this modification is to specify in regulation what already occurs in practice. That is, the department is periodically requested by consulting firms to calculate site-specific cleanup levels for non-listed contaminants.
340(j)(2)	Ingestion was changed to direct contact.
340(k)	Ingestion was changed to direct contact.
341 – Soil Cleanup Levels Tables	
341(a) and 341(b)	Section 341 has been repealed and readopted in its entirety. All text and tables have been included to meet Department of Law requirements.
341 Table B1	A new column has been added to distinguish between carcinogenic and non-carcinogenic contaminants.
341 Table B1	The Ingestion cleanup levels were originally determined to be protective of dermal exposure. New science, however, indicates that this is not always the case. Consistent with EPA guidance (equations 5-1 and 5-2, Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, December 2002) a new exposure category called “Direct Contact,” protective of both pathways, replaces ingestion. The method for integrating dermal exposure has been updated in the department’s <i>Cleanup Levels Guidance</i> .
341 Table B1	Cleanup levels have been revised based on updated information from the Risk Assessment Information System (RAIS). The RAIS database is sponsored by: the U.S. Department of Energy (DOE), Office of Environmental Management, Oak Ridge Operations (ORO) Office. The changes are a result of new toxicity data, modified physical or chemical parameters, or a combination thereof. Table B1 has been repealed and readopted in its entirety for clarity. Individual cleanup levels may be cross-checked by the reviewer using the equations and input parameters in the revised <i>Cleanup Levels Guidance</i> .
341 Table B1	Contaminants listed in the DEC <i>Additional Cleanup Levels Technical Memorandum 01-007</i> , November 24, 2003, have been added to Table B1. The technical memorandum was developed in the past in response to requests for site-specific

Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007

Citation	Description
	cleanup levels for contaminants not listed in the Table B1. The memorandum is available for reference in the Contaminated Sites webpage guidance section. http://www.dec.state.ak.us/spar/csp/guidance/comps_update11_03.pdf
341 Table B1	<p>Migration to groundwater cleanup levels have been modified to a single statewide level for each contaminant. This revision simplifies the table and clarifies the applicability of the migration to groundwater levels.</p> <p>By DEC policy, the most conservative cleanup level for any given contaminant is used as the threshold concentration for unconditional site closure. In most cases this is the migration to groundwater level, currently available in regulation for the under 40-inch and over 40-inch precipitation zones. However, the difference between these levels is not statistically significant; DEC has therefore decided to adopt statewide levels for simplicity.</p> <p>The current migration to groundwater cleanup levels are not applicable to the Arctic zone due to the presence of permafrost, which acts as a barrier to vertical contaminant migration. However, DEC must consider shallow groundwater, also known as supra-permafrost groundwater, as a potential contaminant migration pathway to nearby surface waters. For this reason, DEC by policy has applied the most conservative migration to groundwater levels (the over 40-inch zone) to Arctic sites for unconditional closure. In the absence of site-specific data, DEC assumes this level is protective of lateral contaminant migration. The single statewide number will continue to be used for this purpose.</p> <p>Additional information on modifications to the soil water partitioning equation, the basis for the migration to groundwater cleanup levels, is discussed in the <i>Cleanup Levels Guidance</i> section later in this document.</p>
341 Table B2	A new column has been added to distinguish between carcinogenic and non-carcinogenic contaminants.
341 Table B2	The Ingestion cleanup levels have been renamed “Direct Contact” as in Table B1.
341 Table B2	The aliphatic/aromatic petroleum cleanup levels have been repealed to simplify the regulations. The current aliphatic/aromatic cleanup levels provide the basis for the Total GRO, DRO and RRO clean-up levels. This will not change with the removal of the aromatic/aliphatic cleanup levels from the regulatory table(s). The default values and chemical properties used in the derivation will still be present in the <i>Cleanup Level</i>

Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007

Citation	Description
	<p><i>Guidance</i>, which is adopted by reference. Additionally, the fractions and calculation(s) will remain part of the Method Three calculator. Appropriate site specific data, including petroleum fraction(s) data, will still be able to be submitted to DEC when proposing alternative cleanup levels under Method Three or Method Four.</p>
<p>Notes to Tables B1 and B2</p>	<p>Text in the opening paragraph regarding PCB free mineral oils has been repealed. This text is unnecessary because under revised 340(g) the department will develop site-specific cleanup levels for all unlisted contaminants. Mineral oil will be treated the same as other petroleum hydrocarbons.</p> <p>Text in the opening paragraph regarding the inapplicability of the migration to groundwater cleanup level to the Arctic zone has been repealed. As stated earlier, supra-permafrost groundwater in the Arctic may act as a contaminant migration pathway to nearby surface waters. A single statewide migration to groundwater cleanup level for each listed contaminant is assumed to be protective of surface water. Moreover, site-specific cleanup levels must be protective of surface waters statewide, not just the Arctic as implied by the current note.</p> <p>Note # 5 defining ingestion has been modified to address the new direct contact pathway.</p> <p>Text referencing the inapplicability of the migration to groundwater pathway in note # 7 has been repealed.</p> <p>Note # 8 has been clarified to address all dioxin and furan congeners.</p> <p>The commercial/industrial lead cleanup level referenced in note # 11 has been modified from 1,000 to 800 mg/kg based on IEUBK Lead model and Region 6 PRGs. The revised level is considered protective of the pregnant worker exposed 8 hours per day for 219 days per year.</p> <p>Note # 12 has been modified to include pertinent information contained in the <i>Cumulative Risk Guidance</i>, adopted by reference.</p> <p>Note # 13 pertaining to a factor of 0.5 to account for dermal exposure has been repealed. With the updated method for integrating dermal exposure this factor is now invalid. All subsequent notes have been renumbered.</p> <p>New note # 13 (former note # 14) has been modified to implement true maximum contaminant levels for petroleum hydrocarbon fractions. Presently, these levels may be exceeded if the responsible person demonstrates that contaminant migration will not</p>

Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007

Citation	Description
	<p>occur and that risks are acceptable (carcinogenic risk greater than 1:100,000 or a hazard index greater than 1). Setting residual petroleum hydrocarbon “not to exceed” levels ensures that the state’s policy to “conserve, improve, and protect its natural resources and environment and control water, land, and air pollution...” is fulfilled (AS 46.03.010). Additionally, AS 46.03.900 defines pollution as “the contamination or altering of waters, land or subsurface land of the state in a manner which creates a nuisance or makes waters, land or subsurface land unclean, or noxious, or impure, or unfit so that they are actually or potentially harmful or detrimental or injurious to public health, safety or welfare, to domestic, commercial, industrial, or recreational use, or to livestock, wild animals, birds fish, or other aquatic life. “ Setting true maximum levels for residual petroleum hydrocarbons left in soil after cleanup actions will help ensure that cleanups meet the intent of Alaska pollution control statutes.</p> <p>Several polycyclic aromatic hydrocarbons (PAH) compounds have been added to new note # 14 (former note # 15). The addition is necessary to be consistent with the Total Aqueous Hydrocarbon (TAQH) water quality criteria of 18 AAC 70.</p> <p>New note # 15 has been added to recognize the presence of naturally occurring arsenic throughout Alaska and when a background metals analysis may be warranted.</p>
345 – Groundwater and Surface Water Cleanup Levels	
345 Table C	A new column has been added to distinguish between carcinogenic and non-carcinogenic contaminants.
345 Table C	The aliphatic/aromatic cleanup levels have been repealed for the reasons described above.
345 Table C	Updates to cleanup levels have been made based on new toxicity information (RAIS values).
345 Table C	Contaminants listed in the <i>Additional Cleanup Levels Technical Memorandum</i> have been added to Table C.
345(b)(2)	The “10X” groundwater cleanup rule has been repealed. With this repeal, a back-calculated migration to groundwater soil cleanup level equal to 10 times the table value will no longer be possible. Site-specific groundwater and soil cleanup levels may still be proposed for approval by the department under Methods Three and Four. These

Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007

Citation	Description
	levels may be either higher or lower than 10 times the applicable table values. However, they will be based on more technically sound site-specific conditions.
345(c)(3)(A)	The <i>Standard Methods for the Examination of Water and Wastewater</i> citation has been updated.
360(11)(G)(vi)	The ASTM test method citations have been updated and specific adoption dates repealed. The purpose of this modification is to ensure that the latest version of a specific test method is used.
370 – Table D – Bottom Liner Specifications	The ASTM test method citations have been updated and specific adoption dates repealed. The purpose of this modification is to ensure that the latest version of a specific test method is used.
375(f)	This modification clarifies when the department may eliminate the use of institutional controls.
380(b)(9)(I)	The 42 U.S.C. 6901-6992K citation has been updated.
380(b)(11)	A new sub-section has been added to ensure cumulative risk calculations are included in the final cleanup report.
495(a)(7)	This modification updates the regional master discharge prevention and contingency plan boundary for Western Alaska by specifying the Iditarod and Kuspuk Regional Educational Attendance Areas.
990(12)	The definition of “carcinogen” has been clarified. Text adopting EPA’s <i>Guidelines for Carcinogen Risk Assessment</i> by reference has been repealed.
990(100)	The definition of “qualified person” has been modified to specify direct experience in environmental characterization and cleanup. Five years of direct experience may also substitute for a college degree.

Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007

Citation	Description
990(109)	The definition of “risk assessment,” referencing back to the definition given in Article 6 (Underground Storage Tank Systems) at AS 46.03.450, has been placed directly into regulation. The definition is no longer provided in the statute.

Internal Adopted-By-Reference Guidance Documents	
Cleanup Levels Guidance	<ol style="list-style-type: none"> 1. Extraneous text in the Introduction has been repealed. 2. The ingestion pathway has been relabeled “Direct Contact.” Equations 3 and 4 were updated to include dermal contact and an absorption value. Equation 5 is a new equation to determine the Soil Dermal Factor for Carcinogens. Text has been added to explain how dermal exposure was integrated into the cleanup levels, which chemicals were evaluated for dermal exposure, and the physical properties that were used for that selection. 3. The soil-water organic and inorganic partitioning equations have been modified to correct a mathematical incongruity in the current regulations and to assign a fixed mixing zone depth, fixed Dilution Factor (DF) and revised Attenuation Factor (AF). The overall result is a single statewide migration to groundwater cleanup level for each contaminant. The mathematical incongruity resulted from adding the DF and AF. For example, for the under 40-inch zone a DF of 3.3 was added to a fixed AF of 10.0 to attain a Dilution Attenuation Factor (DAF) of 13.3. The revised DAF, 13.2, correctly multiplies the current under 40-inch zone DF (3.3) by an AF of 4.0. Within a fixed mixing zone of 18 feet, modeling showed that a 105-foot-long source area has an AF of about 2.7, while a 300-foot-long source area has an AF of about 7.5.¹ DEC believes a fixed mixing zone depth of 18 feet, a fixed DF of 3.3, and a fixed AF of 4.0 are conservative enough to generically apply to all contaminated sites across the state. 4. Default values for Surface Area and Adherence Factors have been added to the Commercial/Industrial Exposure Parameters.

¹ Dilution-Attenuation Factors at Fuel Hydrocarbon Spill Sites, Technical Background Document and Recommendations, CH2MHill and Geosphere, December 2006.

**Summary of Proposed Modifications
PUBLIC REVIEW DRAFT
Alaska Administrative Code Title 18, Chapter 75, Article 3
August 30, 2007**

Internal Adopted-By-Reference Guidance Documents	
	<p>5. An Absorption Factor (ABS) Column, which includes values for chemicals that have dermal risk effects, has been added for the dermal contact pathway. Existing contaminant toxicological, physical and chemical properties were updated to the appendix. New contaminants have been added to the Chemical Specific Parameters table.</p> <p>6. A new section titled “Selection of Compounds for Dermal Absorption” has been added to the document. The addition includes a table that lists chemical specific exposure parameter for the dermal exposure route.</p>
Cumulative Risk Guidance	<p>1. The Cumulative Risk Guidance has been updated to clarify inclusion of dermal exposure in direct contact cleanup levels.</p> <p>2. Four PAH compounds have been added to the “Indicator Compounds for Petroleum Contaminated Sites” table to be consistent with the revised footnote #14 of Cleanup Level Tables B1 & B2</p> <p>3. Appendices B and C have been consolidated into one table and updated to reflect changes in toxicity values and chemicals that were added to the cleanup levels tables in the regulations. The Hazard Quotient was revised to one significant figure.</p> <p>4. A table of fugitive dust contaminants of potential concern has been added to identify those compounds that do not have inhalation cleanup levels because they do not meet the DEC definition of volatiles, but do have available toxicity data.</p> <p>5. Compounds that exceed the cancer risk standard and hazard quotient of 1.0 at the Table C groundwater cleanup levels have been updated.</p> <p>6. The definition of carcinogen has been updated according to EPA’s Guidance for Carcinogenic Risk Assessment – EPA/630/P-03/001F (March 2005).</p> <p>7. Reference to the groundwater 10 X rule has been removed.</p> <p>8. Example cumulative risk calculations have been removed for simplification. The examples required frequent updating due to updated data and were not meant to be utilized as departmental mandates.</p>