Table of Contents

58.01.24 - Standards and Procedures for Application of Risk Based Corrective Action at Petroleum Release Sites

000. Legal Authority. 2
001. Title, Scope And Applicability. 2
002. Written Interpretations. 2
003. Administrative Provisions. 2
004. Incorporation By Reference. 2
005. Availability Of Referenced Material. 2
006. Office Hours -- Mailing Address And Street Address. 3
007. Confidentiality Of Records. 3
008. List Of Tables. 3
009. Acronyms. 3
010. Definitions. 3
011. -- 099. (Reserved). 5
100. Chemicals Evaluated At Petroleum Release Sites. 5
101. -- 199. (Reserved). 6
200. Risk Evaluation Process. 6
201. -- 299. (Reserved). 7
300. Site Specific Risk Evaluation Requirements. 7
301. -- 399. (Reserved). 9
400. Establishment Of Remediation Standards. 9
401. -- 499. (Reserved). 9
500. Factors When Practical Quantitation Limits Are Greater Than Screening Levels And Cleanup Levels. 9
501. -- 599. (Reserved). 9
600. Activity And Use Limitations. 9
601. -- 699. (Reserved). 10
700. Development Of Guidance Manual. 10
701. -- 799. (Reserved). 10
800. Tables. 10
801. -- 999. (Reserved). 13

IDAPA 58
TITLE 01
CHAPTER 24

58.01.24 - STANDARDS AND PROCEDURES FOR APPLICATION OF RISK BASED CORRECTIVE ACTION AT PETROLEUM RELEASE SITES

000. LEGAL AUTHORITY.
Chapters 1, 36, 44, 72 and 74, Title 39, Idaho Code grant authority to the Board of Environmental Quality to adopt rules and administer programs to protect public health and the environment, including the protection of surface water, ground water, and drinking water quality. (5-8-09)

001. TITLE, SCOPE AND APPLICABILITY.

01. Title. These rules shall be cited as IDAPA 58.01.24, "Standards and Procedures for Application of Risk Based Corrective Action at Petroleum Release Sites." (5-8-09)

02. Scope. These rules establish standards and procedures to determine whether and what risk based corrective action measures should be applied to property subject to assessment and cleanup requirements under IDAPA 58.01.02, Sections 851 and 852, "Water Quality Standards," and associated definitions; IDAPA 58.01.11, Subsection 400.05, "Ground Water Quality Rule;" or when assessment and cleanup requirements are incorporated into compliance documents entered into per Chapter 1, Title 39, Idaho Code. Compliance with these rules shall not relieve persons from the obligation to comply with other applicable state or federal laws. These rules do not apply to previously closed sites. The Department will not require any additional evaluation of petroleum sites previously granted closure unless there is a new petroleum release. (5-8-09)

002. WRITTEN INTERPRETATIONS.
As described in Section 67-5201(19)(b)(iv), Idaho Code, the Department of Environmental Quality may have written statements which pertain to the interpretation of these rules. If available, such written statements can be inspected and copied at cost at the Department of Environmental Quality, 1410 N. Hilton, Boise, Idaho 83706-1255. (5-8-09)

003. ADMINISTRATIVE PROVISIONS.
Persons may be entitled to appeal agency actions authorized under these rules pursuant to IDAPA 58.01.23, "Rules of Administrative Procedure Before the Board of Environmental Quality." (5-8-09)

004. INCORPORATION BY REFERENCE.
These rules do not contain documents incorporated by reference. (5-8-09)

005. AVAILABILITY OF REFERENCED MATERIAL.
Documents and data bases referenced within these rules are available at the following locations: (5-8-09)

01. Idaho Risk Evaluation Manual. Idaho Risk Evaluation Manual and subsequent editions, http://www.deq.idaho.gov/Applications/Brownfields/index.cfm?site=risk.htm. (5-8-09)

02. U.S. EPA RAGS. U.S. EPA RAGS, Volume 1, http://www.epa.gov/oswer/riskassessment/policy.htm#5. (5-8-09)

03. U.S. EPA Exposure Factors Handbook. U.S. EPA Exposure Factors Handbook, http://www.epa.gov/ncea/pdfs/efh/front.pdf. (5-8-09)

04. U.S. EPA IRIS Database. U.S. EPA IRIS Database, http://cfpub.epa.gov/ncea/iris/index.cfm. (5-8-09)

05. Idaho Source Water Assessment Plan. Idaho Source Water Assessment Plan, http://www.deq.idaho.gov/water/data_reports/source_water/swa_plan_1999.pdf. (5-8-09)

06. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons.

1993. U.S. Environmental Protection Agency, Office of Research and Development, Office of Health and Environmental Assessment, Washington, DC, EPA/600/R-93/089, http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=49732. (5-8-09)

006. OFFICE HOURS -- MAILING ADDRESS AND STREET ADDRESS.
The state office of the Department of Environmental Quality and the office of the Board of Environmental Quality are located at 1410 N. Hilton, Boise, Idaho 83706-1255, (208) 373-0502, www.deq.idaho.gov. The office hours are 8 a.m. to 5 p.m. Monday through Friday. (5-8-09)

007. CONFIDENTIALITY OF RECORDS.
Information obtained by the Department under these rules is subject to public disclosure pursuant to the provisions of Title 9, Chapter 3, Idaho Code, and IDAPA 58.01.21, "Rules Governing the Protection and Disclosure of Records in the Possession of the Idaho Department of Environmental Quality." (5-8-09)

008. LIST OF TABLES.
The following tables are found in Section 800. (5-8-09)

01. **Table 1**. Chemicals of Interest for Various Petroleum Products. (5-8-09)

02. **Table 2**. Residential Use Screening Levels. (5-8-09)

03. **Table 3**. Default Toxicity Values for Risk Evaluation. (5-8-09)

009. ACRONYMS.

01. **ATSDR**. Agency for Toxic Substances and Disease Registry. (5-8-09)

02. **EPA**. The United States Environmental Protection Agency. (5-8-09)

03. **IRIS**. Integrated Risk Information System. (5-8-09)

04. **NCEA**. National Center for Environmental Assessment. (5-8-09)

05. **PST**. Petroleum Storage Tank System. (5-8-09)

06. **RAGS**. Risk Assessment Guidance for Superfund. (5-8-09)

07. **UECA**. Uniform Environmental Covenant Act. See definition in Section 010. (5-8-09)

010. DEFINITIONS.
For the purpose of the rules contained in IDAPA 58.01.24, "Standards and Procedures for Application of Risk Based Corrective Action at Petroleum Release Sites," the following definitions apply: (5-8-09)

01. **Acceptable Target Hazard Index**. The summation of the hazard quotients of all chemicals and routes of exposure to which a receptor is exposed and equal to a value of one (1). If the initial value exceeds one (1), further evaluation, including individual organs, can be completed. (5-8-09)

02. **Acceptable Target Hazard Quotient**. A hazard quotient of 1 for a specified receptor when applied to individual chemicals. (5-8-09)

03. **Acceptable Target Risk Level**. Acceptable risk level for human exposure to carcinogens. For exposure to individual carcinogens a lifetime excess cancer risk of less than or equal to one per one million (1 E-6) for a receptor at a reasonable maximum exposure. For combined exposure to all carcinogens and routes of exposure, a lifetime excess cancer risk of less than or equal to one per one hundred thousand (1 E-5) for a receptor at a reasonable maximum exposure. (5-8-09)

04. **Activity and Use Limitations**. Restrictions or obligations, with respect to real property, created by

an environmental covenant. Activity and use limitations may include, but are not limited to, land use controls, activity and use restrictions, environmental monitoring requirements, and site access and security measures. Also known as institutional controls. (5-8-09)

05. Background. Media specific concentration of a chemical that is consistently present in the environment in the vicinity of a site which is the result of human activities unrelated to release(s) from that site under investigation. (5-8-09)

06. Board. The Idaho Board of Environmental Quality. (5-8-09)

07. Corrective Action Plan. A document, subject to approval by the Department, which describes the actions and measures that will be implemented to ensure that adequate protection of human health and the environment is achieved and maintained. A corrective action plan also describes the applicable remediation standards. Also may be known as a risk management plan or a remediation workplan. (5-8-09)

08. Delineated Source Water Protection Area. The physical area around a public drinking water supply well or surface water intake identified in an approved Department source water assessment that contributes water to a well (the zone of contribution). The size and shape of the delineated source water area depend on the delineation method and site specific factors. The area may be mapped as a one thousand (1000) ft. fixed radius around the well (transient public water systems) or divided into three (3), six (6), and ten (10) year time of travel zones (e.g. zones indicating the number of years necessary for a particle of water to reach a well or surface water intake). For the purposes of these rules, where ground water time of travel zones have been delineated, the three (3) year time of travel zone shall apply. Where surface water systems have been delineated, this area includes a five hundred (500) ft. buffer around a lake or reservoir, or a five hundred (500) ft. buffer along the four (4) hour upstream time of travel of streams. See the Idaho Source Water Assessment Plan. (5-8-09)

09. Department. The Idaho Department of Environmental Quality. (5-8-09)

10. Environmental Covenant. As defined in the Uniform Environmental Covenant Act (UECA), Chapter 30, Title 55, Idaho Code, an environmental covenant is a servitude arising under an environmental response project that imposes activity and use limitations. (5-8-09)

11. Exposure Point Concentration. The average concentration of a chemical to which receptors are exposed over a specified duration within a specified geographical area. The exposure point concentration is typically a conservative estimate of the mean. Also referred to as the representative concentration. (5-8-09)

12. Hazard Quotient. The ratio of a dose of a single chemical over a specified time period to a reference dose for that chemical derived for a similar exposure period. (5-8-09)

13. Method Detection Limit. The minimum concentration of a substance that can be reported with ninety-nine percent (99%) confidence is greater than zero. Method detection limits can be operator, method, laboratory, and matrix specific. (5-8-09)

14. Operator. Any person presently or who was at any time during a release in control of, or responsible for, the daily operation of the petroleum storage tank (PST) system. (5-8-09)

15. Owner. Any person who owns or owned a PST system any time during a release and the current owner of the property where the PST system is or was located. (5-8-09)

16. Person. An individual, public or private corporation, partnership, association, firm, joint stock company, joint venture, trust, estate, state, municipality, commission, political subdivision of the state, state or federal agency, department or instrumentality, special district, interstate body, or any legal entity which is recognized by law as the subject of rights and duties. (5-8-09)

17. Petroleum. Crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (sixty (60) degrees Fahrenheit and fourteen and seven-tenths (14.7) pounds per square inch absolute). This includes petroleum-based substances comprised of a complex blend of hydrocarbons derived from crude oil through

processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, and lubricants. (5-8-09)

18. Petroleum Storage Tank (PST) System. Any one (1) or combination of storage tanks or other containers, including pipes connected thereto, dispensing equipment, and other connected ancillary equipment, and stationary or mobile equipment, that contains petroleum or a mixture of petroleum with de minimis quantities of other regulated substances. (5-8-09)

19. Practical Quantitation Limit. The lowest concentration of a chemical that can be reliably quantified among laboratories within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory operating conditions. Specified limits of precision and accuracy are the criteria listed in the calibration specifications or quality control specifications of an analytical method. Practical quantitation limits can be operator, method, laboratory, and matrix specific. (5-8-09)

20. Reasonable Maximum Exposure. The highest exposure that can be reasonably expected to occur for a human or other living organism at a site under current and potential future site use. (5-8-09)

21. Reference Dose. For chronic or long-term exposures an estimate of a daily exposure level to a chemical for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious noncarcinogenic effects during a lifetime, expressed in units of milligrams per kilogram body weight per day. (5-8-09)

22. Release. Any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from a PST into soil, ground water, or surface water. (5-8-09)

23. Remediation Standard. A media specific concentration which, when attained, is considered to provide adequate protection of human health and the environment. (5-8-09)

24. Residential Use. Residential use means land uses which include residential or sensitive populations. (5-8-09)

25. Risk Based Concentration. The residual media specific concentration of a chemical that is determined to be protective of human health and the environment under specified exposure conditions. (5-8-09)

26. Risk Evaluation. The process used to determine the probability of an adverse effect due to the presence of a chemical. A risk evaluation includes development of a site conceptual model, identification of the chemicals present in environmental media, assessment of exposure and exposure pathways, assessment of the toxicity of the chemicals present, characterization of human risks, and characterization of impacts or risks to the environment. (5-8-09)

27. Screening Level. A media specific concentration which, based on specified levels of risk or hazard, exposure pathways and routes of exposure, expected land use, and exposure factors, can be used to assess the need for additional investigation or corrective action. (5-8-09)

28. Slope Factor. A plausible upper-bound estimate of the probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a potential carcinogen. It is expressed as the probability of a response per unit intake of a chemical over a lifetime. (5-8-09)

29. Uniform Environmental Covenant Act (UECA). UECA is found in Chapter 30, Title 55, Idaho Code. UECA provides a statutory mechanism for creating, modifying, enforcing and terminating environmental covenants. (5-8-09)

011. -- 099. (RESERVED).

100. CHEMICALS EVALUATED AT PETROLEUM RELEASE SITES.

01. General Applicability. For petroleum sites governed by Sections 851 and 852 of IDAPA 58.01.02,

"Water Quality Standards," the chemicals listed in Subsection 800.01 (Table 1) will be evaluated based on the specific petroleum product or products known or suspected to have been released. (5-8-09)

02. Additional Chemicals. Evaluation of non-petroleum chemicals in addition to those in Subsection 800.01 (Table 1) may be required by the Department when there is a reasonable basis based on site-specific information. A reasonable basis shall be demonstrated by the Department when it can show documentation of releases or suspected releases of other non-petroleum chemicals. (5-8-09)

101. -- 199. (RESERVED).

200. RISK EVALUATION PROCESS.
The following risk evaluation process shall be used for petroleum releases in accordance with the Petroleum Release Response and Corrective Action Rules described in IDAPA 58.01.02, "Water Quality Standards," Section 852. (5-8-09)

01. Screening Evaluation. The screening evaluation may be performed at any time during the release response and corrective action process described in IDAPA 58.01.02, "Water Quality Standards," Section 852. The screening evaluation shall include, at a minimum: (5-8-09)

a. Collection of media-specific (soil, surface water, ground water) data; and (5-8-09)

b. Identification of maximum soil and ground water petroleum chemical concentrations for the chemicals identified in Subsection 800.01 (Table 1) as appropriate for the petroleum product or products released. (5-8-09)

c. Comparison of the maximum media-specific petroleum contaminant concentrations to the screening levels identified in Subsection 800.02 (Table 2). If the maximum media-specific petroleum contaminant concentrations at a site do not exceed the screening levels, the owner and/or operator may petition for site closure, subject to other Department regulatory obligations. If the maximum media-specific concentrations at a site exceed the screening levels, the owner and/or operator shall proceed to: (5-8-09)

i. Adopt the screening levels as cleanup levels and develop a corrective action plan to achieve those levels pursuant to Subsection 200.03; or (5-8-09)

ii. Perform a site specific risk evaluation pursuant to Section 300. The Department may require the collection of additional site-specific data prior to the approval of the risk evaluation. (5-8-09)

02. Results of Risk Evaluation. If the results of the approved risk evaluation do not exceed the acceptable target risk level, acceptable target hazard quotient, or acceptable target hazard index specified in Section 300, the owner and/or operator may petition for site closure, subject to other Department regulatory obligations. If the results of the approved risk evaluation indicates exceedance of the acceptable target risk level, acceptable target hazard quotient, or acceptable target hazard index specified in Section 300, the risk evaluation shall: (5-8-09)

a. Be modified by collection of additional site-specific data, or review of chemical toxicological information, and resubmitted to the Department for review and approval; or (5-8-09)

b. Provide the basis for the development of risk based concentrations, establishment of remediation standards as described in Section 400, and development of a corrective action plan. (5-8-09)

03. Development and Implementation of Corrective Action Plan. A Corrective Action plan required as a result of the risk evaluation process described in Section 200 shall include, but not be limited to, the following information, as applicable: (5-8-09)

a. Description of remediation standards, points of exposure, and points of compliance where remediation standards shall be achieved; (5-8-09)

b. Description of remedial strategy and actions that will be taken to achieve the remediation

standards; (5-8-09)

c. Current and reasonably anticipated future land use and use of on-site and immediately adjacent off-site ground water, and surface water; (5-8-09)

d. Activity and use limitations, if any, that will be required as part of the remedial strategy; (5-8-09)

e. Proposed environmental covenants, developed to implement activity and use limitations, in accordance with Section 600; (5-8-09)

f. Estimated timeline for completion; and (5-8-09)

g. Monitoring Plan to monitor effectiveness of remedial actions. (5-8-09)

h. Description of practical quantitation limits as they apply. (5-8-09)

i. Description of background concentrations as they apply. (5-8-09)

04. Department Review and Approval of Risk Evaluation or Corrective Action Plan. Within thirty (30) days of receipt of the risk evaluation or corrective action plan, the Department shall provide in writing either approval, approval with modifications, or rejection of the risk evaluation or corrective action plan. If the Department rejects the risk evaluation or corrective action plan, it shall notify the owner and/or operator in writing specifying the reasons for the rejection. If the Department needs additional time to review the documents, it will provide written notice to the owner and/or operator that additional time to review is necessary and will include an estimated time for review. Extension for review time shall not exceed one hundred eighty (180) days without a reasonable basis and written notice to the owner and/or operator. (5-8-09)

201. -- 299. (RESERVED).

300. SITE SPECIFIC RISK EVALUATION REQUIREMENTS.

01. General Requirements. The general requirements for human health risk evaluations shall include, at a minimum: (5-8-09)

a. A conceptual site model which describes contaminant sources; release mechanisms; the magnitude, spatial extent, and temporal trends of petroleum contamination in all affected media; transport routes; current and reasonably likely future land use and human receptors; and relevant exposure scenarios. (5-8-09)

b. Toxicity Information derived from Subsection 800.03 (Table 3). (5-8-09)

c. Data quality objectives and sampling approaches based on the conceptual site model that support the risk evaluation and risk management process. (5-8-09)

d. Estimated exposure point concentrations for a reasonable maximum exposure based on a conservative estimate of the mean of concentrations of chemicals that would be contacted by an exposed receptor. (5-8-09)

e. Exposure analysis including identification of contaminants of concern, potentially exposed populations, pathways and routes of exposure, exposure point concentrations and their derivation, and a quantitative estimate of reasonable maximum exposure for both current and reasonably likely future land and water use scenarios. Appropriate reference sources of reasonable maximum exposure factor information may include, but are not limited to: (5-8-09)

i. U.S. EPA RAGS, Volume 1; (5-8-09)

ii. U.S. EPA Exposure Factors Handbook; (5-8-09)

iii. Idaho Risk Evaluation Manual; and (5-8-09)

iv. Other referenced technical publications. (5-8-09)

f. Risk characterization presenting the quantitative human health risks and a qualitative and quantitative assessment of uncertainty for each portion of the risk evaluation. (5-8-09)

g. Risk evaluations may include the use of transport and fate models, subject to Department approval of the model and the data to be used for the parameters specified in the model. (5-8-09)

02. Specific Requirements. Human health risk evaluations shall, at a minimum: (5-8-09)

a. Utilize an acceptable target risk level as defined in Section 010; (5-8-09)

b. Utilize an acceptable target hazard index as defined in Section 010; (5-8-09)

c. Utilize an acceptable target hazard quotient as defined in Section 010; (5-8-09)

d. Evaluate the potential for exposure from: (5-8-09)

i. Ground water ingestion; (5-8-09)

ii. Direct contact with contaminated soils resulting from soil ingestion, dermal contact, and inhalation of particulates and vapors; (5-8-09)

iii. Indoor inhalation of volatile chemicals via volatilzation of chemicals from soil, ground water, or free phase product; (5-8-09)

iv. Ingestion, inhalation, or dermal exposure to ground water and/or surface water which has been impacted by contaminants that have leached from the soils; and (5-8-09)

v. Other complete or potentially complete routes of exposure; (5-8-09)

e. Evaluate the potential for exposure to: (5-8-09)

i. Adult and child residential receptors; (5-8-09)

ii. Adult construction and utility workers; (5-8-09)

iii. Aquatic life; (5-8-09)

iv. Recreational receptors; and (5-8-09)

v. Other relevant potentially exposed receptors; (5-8-09)

f. Evaluate the potential for use of impacted ground water for ingestion based on: (5-8-09)

i. The current and historical use of the ground water for drinking water or irrigation; (5-8-09)

ii. The location and approved use of existing ground water wells in a one half (½) mile radius from the contaminated site at the release point; (5-8-09)

iii. The degree of hydraulic connectivity between the impacted ground water and other ground water bearing zones or surface water; and (5-8-09)

iv. The location of delineated source water protection areas for public drinking water systems. (5-8-09)

301. -- 399. (RESERVED).

400. ESTABLISHMENT OF REMEDIATION STANDARDS.
If, as a result of the assessment and risk evaluation completed as described in Section 300, it is determined that corrective action is required, remediation standards shall be established. The remediation standards established in these rules shall be no more stringent than applicable or relevant and appropriate federal and state standards and are consistent with Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. Section 9621) and Section 39-107D(2), Idaho Code, taking into consideration site specific conditions. These standards, and any activity use limitations proposed for the site, shall be established as part of a corrective action plan approved in writing by the Department. The standards may consist of the following. (5-8-09)

01. Screening Levels. The petroleum contaminant concentrations in soil and ground water in Subsection 800.02 (Table 2). (5-8-09)

02. Risk Based Levels. Site-specific, media-specific petroleum contaminant concentrations established in accordance with the risk evaluation procedures and requirements described in Section 300. (5-8-09)

03. Generic Health Standards. An established state or federal generic numerical health standard which achieves an appropriate health-based level so that any substantial present or probable future risk to human health or the environment is eliminated or reduced to protective levels based upon present and reasonably anticipated future uses of the site. (5-8-09)

04. Other. Remediation standards may be a combination of standards found in Subsections 400.01 through 400.03. (5-8-09)

401. -- 499. (RESERVED).

500. FACTORS WHEN PRACTICAL QUANTITATION LIMITS ARE GREATER THAN SCREENING LEVELS AND CLEANUP LEVELS.
Practical quantitation limits may be greater than screening levels or risk based concentrations for certain chemicals. In such cases the following factors may be used in allowing practical quantitation limits as remediation standards: (5-8-09)

01. Analytical Method. The published or expected practical quantitation limit for a specific chemical and method, and the availability of other methods which may enable lower practical quantitation limits to be achieved. (5-8-09)

02. Method Detection Limit. The magnitude of the difference between the stated practical quantitation limit and the method detection limit. (5-8-09)

03. Sampling Procedures. The availability of alternative sampling procedures which may enable lower practical quantitation limits to be achieved. (5-8-09)

04. Estimated Risk Levels. The estimated risk levels when site concentrations are assumed to be at the practical quantitation limit. (5-8-09)

05. Other. Site specific factors other than those listed above. (5-8-09)

501. -- 599. (RESERVED).

600. ACTIVITY AND USE LIMITATIONS.

01. Purpose. The provisions of the Uniform Environmental Covenants Act (UECA), Chapter 30, Title 55, Idaho Code, may be utilized to create restrictions and/or obligations regarding activity and use to protect the integrity of a cleanup action and assure the continued protection of human health and the environment. Activity and use limitations shall be proposed as elements of a corrective action plan in at least the following circumstances: (5-8-09)

a. Where onsite current or proposed land use is not residential and maximum residual site concentrations are greater than screening levels for residential use; (5-8-09)

b. Where onsite current or proposed land use is not residential and the risk or hazard calculated for residential receptors through an approved risk evaluation is unacceptable; (5-8-09)

c. Where off-site ground water concentrations exceed residential use screening levels or risk based concentrations; or (5-8-09)

d. When the Department determines, based upon the proposed corrective action plan, that such activity and use limitations are required to assure the continued protection of human health and the environment or the integrity of the cleanup action. (5-8-09)

02. Documentation of Controls. Activity and use limitations, approved by the Department, shall be described in an environmental covenant executed pursuant to the UECA and shall be incorporated into a corrective action plan. (5-8-09)

03. Removal of Activity and Use Limitations. Activity and use limitations may be removed from a site in accordance with Sections 55-3009 and 55-3010, Idaho Code, of UECA. (5-8-09)

601. -- 699. (RESERVED).

700. DEVELOPMENT OF GUIDANCE MANUAL.
The Department will prepare a risk evaluation manual for petroleum releases which will be used as guidance for implementation of these rules. The Department will, through public notice, invite the Board of Trustees established in Section 41-4904, Idaho Code, and members of the public, including the regulated community, to participate in the process to provide input to the Department in developing this manual. If the Department identifies the need for future substantive revisions of the risk evaluation manual for petroleum releases, the Department will follow the same public notice process as described above. (5-8-09)

701. -- 799. (RESERVED).

800. TABLES.

01. Table 1. Chemicals of Interest for Various Petroleum Products.

CHEMICALS OF INTEREST FOR VARIOUS PETROLEUM PRODUCTS				
Chemical	**Gasoline/ JP-4/ AVGas**	**Diesel/ Fuel Oil No. 2/ Kerosene**	**Fuel Oil No.4**	**Jet Fuels (Jet A, JP-5, JP-8)**
Benzene	X	X		X
Toluene	X	X		X
Ethyl benzene	X	X		X
Xylenes (mixed)	X	X		X
Ethylene Dibromide (EDB)	X[1]			
1,2 Dichloroethane (EDC)	X[1]			
Methyl Tert-Butyl Ether (MTBE)	X			
Acenaphthene		X	X	X
Anthracene		X	X	X

CHEMICALS OF INTEREST FOR VARIOUS PETROLEUM PRODUCTS				
Chemical	**Gasoline/ JP-4/ AVGas**	**Diesel/ Fuel Oil No. 2/ Kerosene**	**Fuel Oil No.4**	**Jet Fuels (Jet A, JP-5, JP-8)**
Benzo(a)pyrene		X	X	X
Benzo(b)fluoranthene		X	X	X
Benzo(k)fluoranthene		X	X	X
Benz(a)anthracene		X	X	X
Chrysene		X	X	X
Fluorene		X	X	X
Fluoranthene		X	X	X
Naphthalene	X	X	X	X
Pyrene		X	X	X
X[1] Leaded Regular Only				

(5-8-09)

02. **Table 2.** Residential Use Screening Levels.

RESIDENTIAL USE SCREENING LEVELS						
CHEMICALS	**SOIL**			**GROUNDWATER**		
	Screening Level [mg/kg]	**Critical Pathway**	**Critical Receptor**	**Screening Level [mg/L]**	**Critical Pathway**	**Basis for Ingestion Target/ Inhalation Critical Receptor[d]**
Benzene	1.78E-02	GWP[a]	GWP	5.00E-03	Ingestion	MCL[b]
Toluene	4.89E+00	GWP	GWP	1.00E+00	Ingestion	MCL
Ethylbenzene	7.10E-02	Subsurface Soil	Child	1.07E-01	Indoor Inhalation	Age-Adjusted
Total Xylenes	1.68E+00	Subsurface Soil	Child	4.46E+00	Indoor Inhalation	Child
Naphthalene	7.8E-02	Subsurface Soil	Age-Adjusted	1.02E-01	Indoor Inhalation	Age-Adjusted
MTBE[c]	6.70E-02	GWP	GWP	3.10E-02	Ingestion	Risk-Based
Ethylene dibromide(EDB)	1.43E-04	GWP	GWP	5.00E-05	Ingestion	MCL
1,2-Dichloroethane	7.71E-03	Subsurface Soil	Child	5.00E-03	Ingestion	MCL

RESIDENTIAL USE SCREENING LEVELS						
CHEMICALS	SOIL			GROUNDWATER		
	Screening Level [mg/kg]	Critical Pathway	Critical Receptor	Screening Level [mg/L]	Critical Pathway	Basis for Ingestion Target/ Inhalation Critical Receptor[d]
Acenaphthene	5.23E+01	GWP	GWP	6.26E-01	Ingestion	Risk-Based
Anthracene	1.04E+03	GWP	GWP	3.13E+00	Ingestion	Risk-Based
Benz(a)anthracene	4.22E-01	Surficial Soil	Age-Adjusted	7.65E-05	Ingestion	Risk-Based
Benzo(a)pyrene	4.22E-02	Surficial Soil	Age-Adjusted	2.00E-04	Ingestion	MCL
Benzo(b)fluoranthene	4.22E-01	Surficial Soil	Age-Adjusted	7.65E-05	Ingestion	Risk-Based
Benzo(k)fluoranthene	4.22E+00	Surficial Soil	Age-Adjusted	7.65E-04	Ingestion	Risk-Based
Chrysene	3.34E+01	GWP	GWP	7.65E-03	Ingestion	Risk-Based
Fluoranthene	3.64E+02	GWP	GWP	4.17E-01	Ingestion	Risk-Based
Fluorene	5.48E+01	GWP	GWP	4.17E-01	Ingestion	Risk-Based
Pyrene	3.59E+02	GWP	GWP	3.13E-01	Ingestion	Risk-Based
a. Ground Water Protection Via Petroleum Contaminants in Soil Leaching to Ground Water						
b. Maximum contaminant level						
c. Methyl tert-butyl ether						
d. For the ingestion pathway the source of the target level is indicated (MCL or a risk-based calculation); for the inhalation pathway the critical receptor is indicated (child or age-adjusted individual).						

(5-8-09)

03. **Table 3.** Default Toxicity Values for Risk Evaluation.

DEFAULT TOXICITY VALUES FOR RISK EVALUATION											
CHEMICALS	CAS Number[a]	Slope Factor				Reference Dose				Oral RA[b] Factor	Dermal RA Factor
		Oral (SFo)		Inhalation (SFi)		Oral (RfDo)		Inhalation (RfDi)			
		(kg-day/ mg)	Source	(kg-day/ mg)	Source	(mg/kg-day)	Source	(mg/kg-day)	Source	(RAFo)	(RAFd)
Benzene	71-43-2	0.055	I	0.027	I	0.004	I	0.0086	I	1	0.0005
Toluene	108-88-3	NA		NA		0.08	I	1.43	I	1	0.03

DEFAULT TOXICITY VALUES FOR RISK EVALUATION											
CHEMICALS	CAS Number[a]	Slope Factor				Reference Dose				Oral RA[b] Factor	Dermal RA Factor
		Oral (SFo)		Inhalation (SFi)		Oral (RfDo)		Inhalation (RfDi)			
		(kg-day/mg)	Source	(kg-day/mg)	Source	(mg/kg-day)	Source	(mg/kg-day)	Source	(RAFo)	(RAFd)
Ethylbenzene	100-41-4	0.011	c	0.009	c	0.1	I	0.29	I	1	0.03
Total Xylenes	1330-20-7	NA		NA		0.2	I	0.029	I	1	0.03
Naphthalene	91-20-3	NA		0.12	c	0.02	I	0.00086	I	1	0.13
MTBE[c]	1634-04-4	0.0018	c	0.00091	c	NA		0.86	I	1	0.0005
1,2-Dichloroethane	107-06-2	0.091	I	0.091	I	NA		0.69	ATSDR	1	0.03
Ethylene Dibromide	106-93-4	2	I	2.1	I	0.009	I	0.0026	I	1	0.03
Acenaphthene	83-32-9	NA		NA		0.06	I	NA		1	0.13
Anthracene	120-12-7	NA		NA		0.3	I	NA		1	0.13
Benz(a) anthracene	56-55-3	0.73	n	0.39	c	NA		NA		1	0.13
Benzo(a)pyrene	50-32-8	7.3	I	3.9	c	NA		NA		1	0.13
Benzo(b) fluoranthene	205-99-2	0.73	n	0.39	c	NA		NA		1	0.13
Benzo(k) fluoranthene	207-08-9	0.073	n	0.39	c	NA		NA		1	0.13
Chrysene	218-01-9	0.0073	n	0.039	c	NA		NA		1	0.13
Fluoranthene	206-44-0	NA		NA		0.04	I	NA		1	0.13
Fluorene	86-73-7	NA		NA		0.04	I	NA		1	0.13
Pyrene	129-00-0	NA		NA		0.03	I	NA		1	0.13

Notes:	Sources of Information:
a Chemical Abstract Service	c: Derived by CAL-EPA
b Relative Absorption	I: IRIS
c Methyl tert-butyl ether	n: NCEA: USEPA (1993). Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. Office of Research and Development. EPA/600/R-93/089. July 1993
NA: No data available	ATSDR: Agency for Toxic Substances and Disease Registry

(5-8-09)

801. -- 999. (RESERVED).

Subject Index

A

Acceptable Target Hazard Index 3
Acceptable Target Hazard Quotient 3
Acceptable Target Risk Level 3
Acronyms 3
Activity & Use Limitations 3, 9
Additional Chemicals 6
Analytical Method 9

B

Background 4

C

Chemicals Evaluated At Petroleum Release Sites 5
Corrective Action Plan 4

D

Definitions 3
Delineated Source Water Protection Area 4
Department Review & Approval of Risk Evaluation or Corrective Action Plan 7
Development & Implementation of Corrective Action Plan 6
Development Of Guidance Manual 10

E

Environmental Covenant 4
Establishment Of Remediation Standards 9
Estimated Risk Levels 9
Exposure Point Concentration 4

F

Factors When Practical Quantitation Limits Are Greater Than Screening Levels & Cleanup Levels 9

G

General Applicability 5
General Requirements 7
Generic Health Standards 9

H

Hazard Quotient 4

L

List Of Tables 3

M

Method Detection Limit 4, 9

O

Operator 4
Owner 4

P

Petroleum 4
Petroleum Storage Tank (PST) System 5
Practical Quantitation Limit 5

R

Reasonable Maximum Exposure 5
Reference Dose 5
Release 5
Remediation Standard 5
Residential Use 5
Results of Risk Evaluation 6
Risk Based Concentration 5
Risk Based Levels 9
Risk Evaluation 5
Risk Evaluation Process 6

S

Sampling Procedures 9
Screening Evaluation 6
Screening Level 5
Screening Levels 9
Site Specific Risk Evaluation Requirements 7
Slope Factor 5
Specific Requirements 8

T

Table 1 10
Table 2 11
Table 3 12
Tables 10

U

Uniform Environmental Covenant Act (UECA) 5