

# Idaho Department of Environmental Quality

## STANDARDS AND PROCEDURES FOR RISK BASED CORRECTIVE ACTION AT PETROLEUM RELEASE SITES

Docket No. 58-0124-1801

NEGOTIATED RULEMAKING

July 19, 2018



DEQ believes there is a need to update the Petroleum Rule (IDAPA 58.01.24) to reflect the EPA's updated toxicity criteria.



## DEQ Proposes:

- An update to Table 2 (DEQ RUSLs);
- An update to Table 3 (Default Toxicity Values for Risk Evaluation);
- Removing Table 2 and Table 3 from the Rule and placing them in the Risk Evaluation Manual.
- Updating the Risk Evaluation Manual as appropriate to accommodate the above changes.

Placing the tables in the Risk Evaluation Manual streamlines future updates resulting in a shorter time period when the DEQ RUSLs may not align with the corresponding EPA toxicity criteria.



# OPTION 1

Update Table 2, Residential Use Screening Levels, and Table 3, Default Toxicity Values for Risk Evaluation, remove them from the rule and transfers the updated tables to the Idaho Risk Evaluation Manual for Petroleum Releases.



## OPTION 2

Update Table 2, Residential Use Screening Levels, and Table 3, Default Toxicity Values for Risk Evaluation in the rule.

Corresponding tables in the Risk Evaluation Manual will also be updated accordingly.



# TABLE 2 RESIDENTIAL USE SCREENING LEVEL UPDATED VALUES

CHEMICAL	SOIL (mg/kg)			GROUNDWATER (mg/L)		DEEP SOIL VAPOR TARGET SUB-SLAB AND NEAR-SOURCE SOIL GAS CONCENTRATIONS (µg/m3) (>3-5 feet bgs)	
	Vapor Intrusion	Direct Contact	Groundwater Protection	Vapor Intrusion	Ingestion	Unrestricted Use	Commercial/Industrial
						Vapor Intrusion	Vapor Intrusion
Benzene	0.08	8.3	0.025	0.044	0.005	<del>3</del> <u>12</u>	<del>160</del> <u>53</u>
Toluene	1300	7930	6.6	340	1	<del>520000</del> <u>170000</u>	<del>2200000</del> <u>733</u>
Ethylbenzene	0.25	39	7.4	0.05	0.700	<del>97</del> <u>37</u>	<del>490</del> <u>163</u>
Xylenes	27	<del>6170</del> <u>6100</u>	<del>9193</del>	8.7	10	<del>10000</del> <u>3500</u>	<del>44000</del> <u>14667</u>
Naphthalene	0.12	44	<del>9</del> <u>221</u>	0.07	0.73	<del>7</del> <u>2.8</u>	<del>36</del> <u>12</u>
MTBE	2.4	340	0.08	6.8	0.04	<del>940</del> <u>360</u>	<del>4700</del> <u>1567</u>
1,2-Dichloroethane	0.02	3.7	0.013	0.03	0.005	<del>9</del> <u>3.6</u>	<del>47</del> <u>16</u>
Ethylene Dibromide	0.001	0.27	0.00014	0.004	0.00005	<del>0.40</del> <u>16</u>	<del>2</del> <u>0.67</u>
Acenaphthene	NA	4470	200	NA	2.2	NA	NA
Anthracene	NA	22300	3200	NA	11	NA	NA
Benz(a)anthracene	106	<del>0.19</del> <u>1.4</u>	<del>0.09</del> <u>0.68</u>	0.60	<del>0.00003</del> <u>0.00022</u>	<del>NA</del> <u>0.56</u>	<del>NA</del> <u>6.67</u>
Benzo(a)pyrene	NA	<del>0.02</del> <u>0.14</u>	2.1	NA	0.0002	NA	NA
Benzo(b)fluoranthene	NA	<del>0.19</del> <u>1.4</u>	<del>0.31</del> <u>2.29</u>	NA	<del>0.00003</del> <u>0.00022</u>	NA	NA
Benzo(k)fluoranthene	NA	<del>1.9</del> <u>14</u>	<del>3.1</del> <u>22.5</u>	NA	<del>0.0003</del> <u>0.0022</u>	NA	NA
Chrysene	NA	<del>19</del> <u>139</u>	<del>9</del> <u>569</u>	NA	<del>0.003</del> <u>0.022</u>	NA	NA
Fluoranthene	NA	2970	1400	NA	1.5	NA	NA
Fluorene	NA	2970	240	NA	1.5	NA	NA
Pyrene	NA	2230	1000	NA	1.1	NA	NA

Values in bold are current screening level values specified in the Rule. Screening level values for ~~deep soil vapor sub-slab and near-soil gas concentration~~ are equivalent to EPA Regional Screening Levels (EPA, ~~2012-2018~~) for residential and industrial ambient air divided by an attenuation factor of ~~0.01~~0.03

NA: not applicable because the chemical does not meet EPA volatility criteria or does not have a Regional Screening Level for ambient air.



# EPA VISLs

- In May 2018 the EPA published Vapor Intrusion Screening Level (VISL) criteria.
- Previously, EPA only posted indoor air screening levels. Currently, EPA has developed screening levels for sub-slab and near-soil gas. EPA is no longer considering deep soil vapor for petroleum constituents.



# EPA VISLs Continued

- The DEQ RUSLs for deep soil vapor are currently based on the EPA RSLs for Residential and Industrial Indoor Air divided by an attenuation factor of 0.01.
- Using the same logic DEQ currently approves the use of an attenuation factor of 0.1 for sub-slab or near surface soil vapor.
- As part of the DEQ RUSL update, DEQ proposes adopting the EPA's current Vapor Intrusion guidance and use of an attenuation factor of 0.03 for sub-slab or near surface soil.





# EPA VISLs Continued

For Example:

- The current DEQ RUSL for naphthalene is 7  $\mu\text{g}/\text{m}^3$  for deep soil vapor. For sub-slab or near surface soil vapor DEQ currently approves using an attenuation factor of 0.1 to calculate the screening level resulting in a screening level of **0.7  $\mu\text{g}/\text{m}^3$** .
- However, using EPA's revised indoor air screening level of 0.083  $\mu\text{g}/\text{m}^3$ , and an attenuation factor of 0.03, the sub-slab and near surface soil screening level would be revised to **2.8  $\mu\text{g}/\text{m}^3$** .



# TABLE 3 Default Toxicity Values

DEFAULT TOXICITY VALUES FOR RISK EVALUATION							
CHEMICALS	CAS Number <sup>a</sup>	Oral Slope Factor (SF <sub>o</sub> ) (kg-day/mg)	Inhalation Unit Risk (IUR) (µg/m <sup>3</sup> )	Oral Reference Dose (RfD <sub>o</sub> ) (mg/kg-day)	Inhalation Reference Concentration (RfC) (mg/m <sup>3</sup> )	Oral RA <sup>b</sup> Factor (RAF <sub>o</sub> )	Dermal RA Factor (RAF <sub>d</sub> )
Benzene	71-43-2	0.055	7.8E-06	0.004	0.03	1	0
Toluene	108-88-3	NA	NA	0.08	5.0	1	0
Ethylbenzene	100-41-4	0.011	2.5E-06	0.1	1.0	1	0
Total Xylenes	1330-20-7	NA	NA	0.2	0.1	1	0
Naphthalene	91-20-3	NA	3.4E-05	0.02	0.003	1	0.13
MTBE <sup>c</sup>	1634-04-4	0.0018	2.6E-07	NA	3.0	1	0
1,2-Dichloroethane	107-06-2	0.091	2.6E-05	0.006	0.007	1	0
Ethylene Dibromide	106-93-4	2	6.0E-04	0.009	0.009	1	0
Acenaphthene	83-32-9	NA	NA	0.06	NA	1	0.13
Anthracene	120-12-7	NA	NA	0.3	NA	1	0.13
Benz(a)anthracene	56-55-3	<del>0.73</del> <u>0.1</u>	1.1E-04	NA	NA	1	0.13
Benzo(a)pyrene	50-32-8	<del>7.3</del> <u>1</u>	1.1E-03	<del>NA</del> <u>3.0E-04</u>	NA	1	0.13
Benzo(b)fluoranthene	205-99-2	<del>0.73</del> <u>0.1</u>	1.1E-04	NA	NA	1	0.13
Benzo(k)fluoranthene	207-08-9	<del>0.073</del> <u>0.01</u>	1.1E-04	NA	NA	1	0.13
Chrysene	218-01-9	<del>0.0073</del> <u>0.001</u>	1.1E-05	NA	NA	1	0.13
Fluoranthene	206-44-0	NA	NA	0.04	NA	1	0.13
Fluorene	86-73-7	NA	NA	0.04	NA	1	0.13
Pyrene	129-00-0	NA	NA	0.03	NA	1	0.13
<b>Notes:</b>							
a Chemical Abstract Service							
b Relative Absorption							
c Methyl tert-butyl ether							
NA: No data available							
Source of toxicity values is the Regional Screening Level Summary Table (May 2014/2018) found at the U.S. EPA Regional Screening Table website. The website is located at <a href="http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm">http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm</a> .							



# OTHER ASSOCIATED AND PROPOSED REVISIONS TO THE RISK EVALUATION MANUAL

- Currently, Table 4 in the Risk Evaluation Manual is the Surface Water Toxics Criteria for Petroleum Chemicals of Interest. These screening levels are dated and inaccurate.
- DEQ proposes eliminating Table 4 from the guidance and instead, providing the appropriate IDAPA citation, (58.01.02.210.01.b) of where current surface water toxics criteria can be found.
- This minor change will allow for more flexibility if surface water criteria changes in the future.



# Questions / Discussion



# Next Steps:



- Comment deadline is August 13, 2018
  - Option 1: Update Tables 2 & 3 and remove Tables 2 & 3 from the Rule and list them only in manual
  - Option 2: Update Tables 2 & 3 in both the Rule and Manual, and maintain them in the Rule
  - VISL and Surface Water Criteria revisions
- Next meeting will be August 23, 2018



Thank you.

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Thank you

