Purpose: Brief the external stakeholders on the changes between the Remediation Standard Amendment Proposal of 2016 and the Remediation Standard Amendment Proposal of 2018 that were not reviewed by the external stakeholders.

If editorial changes and clarifications are excluded, the majority of changes are due to:

1. Changes in toxicity factors that were used in the 2016 Proposal. The 2016 values were based on information available prior to November 2014. There are 11 contaminants in this category.
2. Changes in the physical and chemical factors or dermal factors that were used in the 2016 Proposal. The 2016 values were based on information available prior to November 2014. There are 3 contaminants in this category.
3. Newly promulgated ground water quality standards or changes to the existing ground water quality standards. There are 4 contaminants in this category.

A summary of the standard changes is detailed in the following figure.

Contaminant Remediation Standard Differences Between the 2016 and 2018 Proposals

Attached are a series of spreadsheets detailing analyses of the numerical changes within a given exposure pathway as well as for the residential and nonresidential use scenarios.
### Soil Remediation Standards - Ingestion/Dermal Exposure Pathway

#### Comparison of 2016 and 2018 Proposed Remediation Standards

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>CAS No.</th>
<th>2016 Proposed Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)</th>
<th>2018 Proposed Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)</th>
<th>2016 Proposed Non-Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)</th>
<th>2018 Proposed Non-Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzoic acid (1,2-Benzanthrene)</td>
<td>100-52-7</td>
<td>7.800</td>
<td>170^a</td>
<td>130,000</td>
<td>910^b</td>
</tr>
<tr>
<td>Benzo(a)pyrene</td>
<td>50-32-8</td>
<td>0.7</td>
<td>5.1^f</td>
<td>3.2</td>
<td>23^g</td>
</tr>
<tr>
<td>Benzo[b]fluoranthene (5,6)</td>
<td>205-99-2</td>
<td>0.7</td>
<td>5.1^f</td>
<td>3.2</td>
<td>23^g</td>
</tr>
<tr>
<td>Benzo[k]fluoranthene</td>
<td>207-08-9</td>
<td>7</td>
<td>51^i</td>
<td>32</td>
<td>230^j</td>
</tr>
<tr>
<td>2-Chloronaphthalene</td>
<td>91-58-7</td>
<td>6,300</td>
<td>4,800^e</td>
<td>100,000</td>
<td>67,000^f</td>
</tr>
<tr>
<td>Chrysene</td>
<td>218-01-9</td>
<td>70</td>
<td>510^j</td>
<td>320</td>
<td>2800^k</td>
</tr>
<tr>
<td>Dibenz(a,h)anthracene</td>
<td>53-70-3</td>
<td>0.17^h</td>
<td>0.51^i</td>
<td>0.32</td>
<td>2.3^j</td>
</tr>
<tr>
<td>1,2-Dichloropropane</td>
<td>78-87-5</td>
<td>19^l</td>
<td>19^m</td>
<td>100</td>
<td>98^n</td>
</tr>
<tr>
<td>Indeno[1,2,3-cd]pyrene</td>
<td>193-39-5</td>
<td>0.7</td>
<td>5.1^f</td>
<td>3.2</td>
<td>23^g</td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>95-68-6</td>
<td>NS</td>
<td>780^o</td>
<td>NS</td>
<td>13000^p</td>
</tr>
</tbody>
</table>

**NS** - No standard

^aChange in proposed remediation standard due to an update of a toxicological factor

^bProposed new standard decreases by more than an order of magnitude

^cProposed standard set at the analytical reporting limit. The health-based criterion is 0.07 mg/kg

^dChange in proposed standard due to application of a dermal absorption factor

^eAn update in the toxicological factor did not result in a change in the standard
### Soil Remediation Standards - Inhalation Exposure Pathway

Comparison of 2016 and 2018 Proposed Remediation Standards

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>CAS No.</th>
<th>2016 Proposed Residential Soil Inhalation Remediation Standards (mg/kg)</th>
<th>2018 Proposed Residential Soil Inhalation Remediation Standards (mg/kg)</th>
<th>2016 Proposed Non Residential Soil Inhalation Remediation Standards (mg/kg)</th>
<th>2018 Proposed Non Residential Soil Inhalation Remediation Standards (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzo(a)anthracene (1,2-Benzanthracene)</td>
<td>56-55-3</td>
<td>43,000</td>
<td>78,000&lt;sup&gt;3&lt;/sup&gt;</td>
<td>200,000</td>
<td>370,000&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td>Benzo(a)pyrene</td>
<td>50-32-8</td>
<td>4,300</td>
<td>3,500&lt;sup&gt;4&lt;/sup&gt;</td>
<td>20,000</td>
<td>16,000&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td>Benzo(b)fluoranthene (3,4-)</td>
<td>205-99-2</td>
<td>43,000</td>
<td>78,000&lt;sup&gt;3&lt;/sup&gt;</td>
<td>200,000</td>
<td>370,000&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td>Benzo(k)fluoranthene</td>
<td>207-08-9</td>
<td>43,000</td>
<td>780,000&lt;sup&gt;9&lt;/sup&gt;</td>
<td>200,000</td>
<td>NS&lt;sup&gt;9&lt;/sup&gt;</td>
</tr>
<tr>
<td>Chrysene</td>
<td>218-01-9</td>
<td>430,000</td>
<td>NS&lt;sup&gt;9&lt;/sup&gt;</td>
<td>NS&lt;sup&gt;9&lt;/sup&gt;</td>
<td>NS&lt;sup&gt;9&lt;/sup&gt;</td>
</tr>
<tr>
<td>Dibenz(a,h)anthracene</td>
<td>53-70-3</td>
<td>3,900</td>
<td>7,800&lt;sup&gt;4&lt;/sup&gt;</td>
<td>19,000</td>
<td>37,000&lt;sup&gt;9&lt;/sup&gt;</td>
</tr>
<tr>
<td>1,2-Dichloropropane</td>
<td>78-87-5</td>
<td>NS&lt;sup&gt;4&lt;/sup&gt;</td>
<td>5.7&lt;sup&gt;6&lt;/sup&gt;</td>
<td>NS&lt;sup&gt;5&lt;/sup&gt;</td>
<td>27&lt;sup&gt;6&lt;/sup&gt;</td>
</tr>
<tr>
<td>Indeno(1,2,3-cd)pyrene</td>
<td>193-39-5</td>
<td>43,000</td>
<td>78,000&lt;sup&gt;3&lt;/sup&gt;</td>
<td>200,000</td>
<td>370,000&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

NS = No Standard

<sup>3</sup>Change in proposed remediation standard due to an update of a toxicological factor

<sup>4</sup>No proposed remediation standard as calculated value is greater than the soil saturation level and calculated value is greater than a million parts per million

<sup>5</sup>No proposed remediation standard as no appropriate toxicological information was available at the time

<sup>6</sup>Appropriate toxicological information became available
### Soil Remediation Standards - Soil Migration to Ground Water Exposure Pathway - Soil Water Partitioning Standards

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>CAS No.</th>
<th>2016 Proposed Migration to Ground Water Soil Water Partitioning Remediation Standard (mg/kg)</th>
<th>2018 Proposed Migration to Ground Water Soil Water Partitioning Remediation Standard (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caprolactam</td>
<td>105-60-2</td>
<td>20</td>
<td>16¹</td>
</tr>
<tr>
<td>1,2-Dichloroethene (trans) (t-1,2-Dichloroethylene)</td>
<td>156-60-5</td>
<td>0.51</td>
<td>0.55³</td>
</tr>
<tr>
<td>2-Hexanone</td>
<td>591-78-6</td>
<td>1.1</td>
<td>0.15⁴</td>
</tr>
<tr>
<td>2-Methylphenol (o-cresol)</td>
<td>95-48-7</td>
<td>NR</td>
<td>0.77²</td>
</tr>
<tr>
<td>4-Methylphenol (p-cresol)</td>
<td>106-44-5</td>
<td>NR</td>
<td>0.75⁵</td>
</tr>
<tr>
<td>2,3,4,6-Tetrachlorophenol</td>
<td>58-90-2</td>
<td>24</td>
<td>26⁶</td>
</tr>
</tbody>
</table>

NR = Compound not regulated (No Ground Water Quality Standard existed)

¹Change in proposed remediation standard as a result of the January 2018 change of the Ground Water Quality Standard
²Change in proposed remediation standard as a result in a change in the Henry’s Law constant for this chemical
³Creation of proposed remediation standard as a result of the January 2018 promulgation of a new Ground Water Quality Standard
⁴Change in proposed remediation standard as a result in a change of the K₅₆ value for this chemical

### Soil Remediation Standards - Soil Migration to Ground Water Exposure Pathway - Soil Leachate Standards

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Caprolactam</td>
<td>105-60-2</td>
<td>5,000</td>
<td>4,000</td>
<td>100,000</td>
<td>80,000</td>
</tr>
<tr>
<td>2-Hexanone</td>
<td>591-78-6</td>
<td>300</td>
<td>40</td>
<td>6,000</td>
<td>800³</td>
</tr>
<tr>
<td>2-Methylphenol (o-cresol)</td>
<td>95-48-7</td>
<td>NR</td>
<td>50</td>
<td>NR</td>
<td>1,000⁵</td>
</tr>
<tr>
<td>4-Methylphenol (p-cresol)</td>
<td>106-44-5</td>
<td>NR</td>
<td>50</td>
<td>NR</td>
<td>1,000⁶</td>
</tr>
</tbody>
</table>

NR = Compound not regulated (No Ground Water Quality Standard existed)

¹Change in proposed remediation standard as a result of the January 2018 change of the Ground Water Quality Standard
³Creation of remediation standard as a result of the January 2018 promulgation of a new Ground Water Quality Standard
USEPA equations are the basis of the standards calculation. The most current reference detailing those equations is the USEPA Regional Screening Levels (RSLs) – Equations, November 2018. While the same equations are used by both the USEPA and the Department, the USEPA format differs in appearance. Consequently, for purposes of transparency, an appendix is being developed that illustrates the derivation of the Department equations from the USEPA equations and will be added to the rule proposal.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>CAS No.</th>
<th>2016 Proposed Residential Indoor Air Remediation Standards (μg/m³)</th>
<th>2018 Proposed Residential Indoor Air Remediation Standards (μg/m³)</th>
<th>2016 Proposed Non-Residential Indoor Air Remediation Standards (μg/m³)</th>
<th>2018 Proposed Non-Residential Indoor Air Remediation Standards (μg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-dichloropropane</td>
<td>78-87-5</td>
<td>4.2</td>
<td>0.92</td>
<td>18</td>
<td>3.3</td>
</tr>
<tr>
<td>1,1,2-trichloro-1,2,2-trifluorocethane</td>
<td>76-13-1</td>
<td>31,000</td>
<td>5,200</td>
<td>130,000</td>
<td>22,000</td>
</tr>
<tr>
<td>1,2,4-trimethylbenzene</td>
<td>95-63-6</td>
<td>7.3</td>
<td>63</td>
<td>31</td>
<td>260</td>
</tr>
</tbody>
</table>

a Change in proposed remediation standard as a result of an update of a toxicological factor
b Proposed standard set at the analytical reporting limit. The health based criterion is 0.78 μg/m³