Briefing Document for the December 18, 2018 Briefing of the External Stakeholders

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

		Soil Ingestion Dermal Exposure Pathway		Soil Inhalation Exposure Pathway		Vapor Intrusion Exposure Pathway		Migration to Ground Water Exposure Pathway	
Contaminant	CAS No.	Residential	Non-Residential	Residential	Non-Residential	Residential	Non-Residential	Soil-Water Partition	Soil Leachate
Benzaldehyde	100-52-7	DOWN > OM	DOWN > OM						
Benzo(a)anthracene (1,2-Benzanthracene)	56-55-3	UP >10%	UP >10%	UP >10%	UP >10%				
Benzo(a)pyrene	50-32-8	UP >10%	UP >10%	DOWN >10%	DOWN >10%				
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	205-99-2	UP >10%	UP >10%	UP >10%	UP >10%				
Benzo(k)fluoranthene	207-08-9	UP >10%	UP >10%	UP >10%	Not Regulated				
Caprolactam	105-60-2							DOWN >10%	DOWN >10%
2-Chloronaphthalene	91-58-7	DOWN > 10%	DOWN > 10%						
Chrysene	218-01-9	UP >10%	UP >10%	Not Regulated	Not Regulated				
Dibenz(a,h)anthracene	53-70-3	UP >10%	UP >10%	UP >10%	UP >10%				
1,2-Dichloroethene (trans) (t-1,2-Dichloroethylene)	156-60-5							UP < 10%	
1,2-Dichloropropane	78-87-5		DOWN <10%	New Std	New Std	DOWN >10%	DOWN >10%		
2-Hexanone	591-78-6							DOWN >10%	DOWN >10%
Indeno(1,2,3-cd)pyrene	193-39-5	UP >10%	UP >10%	UP >10%	UP >10%				
2-Methylphenol (o-cresol)	95-48-7							New Std	New Std
4-Methylphenol (p-cresol)	106-44-5							New Std	New Std
2,3,4,6-Tetrachlorophenol	58-90-2							UP < 10%	
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1					DOWN >10%	DOWN >10%		
1,2,4-Trimethylbenzene	95-63-6	New Std	New Std			UP >10%	UP >10%		

	Greater than 10% increase		Decrase by more than an order of magnitude
	Increase up to 10%		New standard
	Greater than 10% decrease		Not regulated
	Decrease up to 10%		

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

Contaminant	CAS No.	2016 Proposed Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)	2018 Proposed Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)	2016 Proposed Non-Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)	2018 Proposed Non-Residential Soil Ingestion/Dermal Remediation Standards (mg/kg)
Benzaldehyde	100-52-7	7,800	170[ab]	130,000	910[ab]
Benzo(a)anthracene (1,2-Benzanthrene)	56-55-3	0.7	5.1[a]	3.2	23[a]
Benzo(a)pyrene	50-32-8	0.17[c]	0.51[a]	0.32	2.3[a]
Benzo(b)fluoranthene (3,4-	205-99-2	0.7	5.1[a]	3.2	23[a]
Benzo(k)fluoranthene	207-08-9	7	51[a]	32	230[a]
2-Chloronaphthalene	91-58-7	6,300	4,800[d]	100,000	67,000[d]
Chrysene	218-01-9	70	510[a]	320	2300[a]
Dibenz(a,h)anthracene	53-70-3	0.17[c]	0.51[a]	0.32	2.3[a]
1,2-Dichloropropane	78-87-5	19[e]	19[e]	100	98[a]
Indeno(1,2,3-cd)pyrene	193-39-5	0.7	5.1[a]	3.2	23[a]
1,2,4-Trimethylbenzene	95-63-6	NS	780[a]	NS	13000[a]

NS - No standard

[a]Change in proposed remediation standard due to an update of a toxicological factor

[b]Proposed new standard decreases by more than an order of magnitude

[c] Proposed standard set at the analytical reporting limit. The health based criterion is 0.07 mg/kg

[d]Change in proposed standard due to application of a dermal absorption factor

[e]An update in the toxicological factor did not not result in a change in the standard

Soil Remediation Standards - Inhalation Exposure Pathway
Comparison of 2016 and 2018 Proposed Remediation Standards

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

NS - No Standard

[a]Change in proposed remediation standard due to an update of a toxicological factor

[b]No proposed remedation standard as calculated value is greater than the soil saturation level and calculated value is greater than a million parts per million

[c]No proposed remediation standard as no appropriate toxicological information was available at the time

[d]Appropriate toxicological information became available

Soil Remediation Standards -Soil Migration to Ground Water Exposure Pathway - Soil Water Partitioning Standards
Comparison of 2016 and 2018 Proposed Remediation Standards

Contaminant	CAS No.	2016 Proposed Migration to Ground Water Soil Water Partitioning Remediation Standard (mg/kg)	2018 Proposed Migration to Ground Water Soil Water Partitioning Remediation Standard (mg/kg)
Caprolactam	105-60-2	20	16[a]
1,2-Dichloroethene (trans) (t-1,2-Dichloroethylene)	156-60-5	0.51	0.56[b]
2-Hexanone	591-78-6	1.1	0.15[a]
2-Methylphenol (o-cresol)	95-48-7	NR	0.77[c]
4-Methylphenol (p-cresol)	106-44-5	NR	0.75[c]
2,3,4,6-Tetrachlorophenol	58-90-2	24	26[d]

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

[a]Change in proposed remediation standard as a result of the January 2018 change of the Ground Water Quality Standard

[b]Change in proposed remediation standard as a result in a change in the Henry's Law constant for this chemical

[c]Creation of proposed remediation standard as a result of the January 2018 promulgation of a new Ground Water Quality Standard

[d]Change in proposed remediation standard as a result in a change of the K_{oc} value for this chemical

Soil Remediation Standards -Soil Migration to Ground Water Exposure Pathway - Soil Leachate Standards
Comparison of 2016 and 2018 Proposed Remediation Standards

Contaminant	CAS No.	2016 Ground Water Remediation Standard (ug/l)	2018 Ground Water Remediation Standard (ug/l)	2016 Proposed Migration to Ground Water Soil Leachate Remediation Standard (ug/l)	2018 Proposed Migration to Ground Water Soil Leachate Remediation Standard (ug/l)
Caprolactam	105-60-2	5,000	4,000	100,000	80,000[a]
2-Hexanone	591-78-6	300	40	6,000	800[a]
2-Methylphenol (o-cresol)	95-48-7	NR	50	NR	1,000[b]
4-Methylphenol (p-cresol)	106-44-5	NR	50	NR	1,000[b]

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

[a]Change in proposed remediation standard as a result of the January 2018 change of the Ground Water Quality Standard

[b]Creation of remediation standard as a result of the January 2018 promulgation of a new Ground Water Quality Standard

Indoor Air Remediation Standards - Vapor Intrusion Exposure Pathway
Comparison of 2016 and 2018 Proposed Remediation Standards

Contaminant	CAS No.	2016 Proposed Residential Indoor Air Remediation Standards (ug/m3)	2018 Proposed Residential Indoor Air Remediation Standards (ug/m3)	2016 Proposed Non-Residential Indoor Air Remediation Standards (ug/m3)	2018 Proposed Non-Residential Indoor Air Remediation Standards (ug/m3)
1,2-dichloropropane	78-87-5	4.2	0.92[a,b]	18	3.3[a]
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1	31,000	5,200[a]	130,000	22,000[a]
1,2,4-trimethylbenzer	95-63-6	7.3	63[a]	31	260[a]

[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 0.76 ug/m3

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.