

## Appendix 8: Chemical Ranking Criteria

Human Health: Carcinogenicity			
	High (H)	Moderate (M)	Low (L)
<b>Step I Sources</b>			
#	<b>Priority Sources</b>		
1	<b>US NIH - Report on Carcinogens</b> Known to be a human Carcinogen Known to be Human Carcinogen (respirable size - occupational setting) Reasonably Anticipated to be Human Carcinogen Reasonably Anticipated to be Human Carcinogen (respirable size - occupational setting)		
2	<b>CA EPA - Prop 65</b> Carcinogen Carcinogen (form-specific or based on limited exposure pathways)		
3	<b>EU - SVHC Authorisation List</b> Carcinogenic - Banned unless Authorised Carcinogenic - Candidate list Carcinogenic - Prioritized for listing		
4	<b>US CDC - Occupational Carcinogens</b> Occupational Carcinogen		
5	<b>IARC</b> Group 1 - Agent is Carcinogenic to humans Group 1 - Agent is carcinogenic to humans - inhaled from occupational sources Group 2a - Agent is probably Carcinogenic to humans Group 2A - Agent is probably carcinogenic to humans - inhaled from occupational sources	<b>IARC</b> Group 2b - Possibly carcinogenic to humans Group 2b - Possibly carcinogenic to humans - inhaled from occupational sources Group 3 - Agent is not classifiable as to its carcinogenicity to humans	<b>IARC</b> Group 4 - Agent is probably not carcinogenic to humans
6	<b>US EPA - IRIS Carcinogens</b> (1986) Group A - Human Carcinogen (1986) Group B1 - Probable human Carcinogen (1986) Group B2 - Probable human Carcinogen (1996) Known/likely human Carcinogen (1999) Carcinogenic to humans (1999) Likely to be Carcinogenic to humans (2005) Carcinogenic to humans (2005) Likely to be Carcinogenic to humans	<b>US EPA - IRIS Carcinogens</b> (1986) Group C - Possible human Carcinogen (1986) Group D - Not classifiable as to human carcinogenicity (1999) Suggestive evidence of carcinogenicity (2005) Suggestive evidence of Carcinogenic potential	<b>US EPA - IRIS Carcinogens</b> (1986) Group E - Evidence of non-carcinogenicity for humans (1996) Not likely to be carcinogenic to humans (1999) Not likely to be Carcinogenic to humans (2005) Not likely to be Carcinogenic to humans
7	<b>EU - Annex VI CMRs</b> Carcinogen Category 1A - Known human Carcinogen based on human evidence Carcinogen Category 1B - Presumed Carcinogen based on animal evidence	<b>EU - Annex VI CMRs</b> Carcinogen Category 2 - Suspected human Carcinogen	
8	<b>EU - GHS (H-Statements)</b> H350 - May cause cancer H350i - May cause cancer by inhalation	<b>EU - GHS (H-Statements)</b> H351 - Suspected of causing cancer	
9	<b>EU - REACH Annex XVII CMRs</b> Carcinogen Category 1 - Substances known to be Carcinogenic to man Carcinogen Category 2 - Substances which should be regarded as if they are Carcinogenic to man	<b>EU - REACH Annex XVII CMRs</b> Carcinogen Category 3 - Possibly Carcinogenic to humans (listed as Carc. Cat. 3)	
10	<b>EU - R-phrases</b> R45 - May cause cancer R49 - May cause cancer by inhalation	<b>EU - R-phrases</b> R40 - Limited Evidence of Carcinogenic Effects	
11	<b>MAK</b> Carcinogen Group 1 - Substances that cause cancer in man Carcinogen Group 2 - Considered to be carcinogenic for man	<b>MAK</b> Carcinogen Group 3A - Evidence of carcinogenic effects but not sufficient to establish MAK/BAT value Carcinogen Group 3B - Evidence of carcinogenic effects but not sufficient for classification Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels Carcinogen Group 5 - Genotoxic carcinogen with very slight risk under MAK/BAT levels	
#	<b>Secondary Sources</b>		
12	<b>Japan - GHS</b> Carcinogenicity - Category 1, 1A or 1B	<b>Japan - GHS</b> Carcinogenicity - Category 2	<b>Japan - GHS</b> Not classified (sufficient information; chemical is not problematic)
13	<b>Korea - GHS</b> Carcinogenicity - Category 1, 1A or 1B [H350 - May cause cancer]	<b>Korea - GHS</b> Carcinogenicity - Category 2 [H351 - Suspected of causing cancer]	
14	<b>New Zealand - GHS</b> 6.7A - Known or presumed human carcinogens	<b>New Zealand - GHS</b> 6.7B - Suspected human carcinogens	
<b>Step II Sources</b>			
15	<b>ISSCAN Value</b> Ranking = 3, Carcinogenic	<b>ISSCAN Value</b> Ranking = 2, Undetermined or equivocal	<b>ISSCAN Value</b> Ranking = 1, Non-carcinogenic
16	<b>ECHA C&amp;L Inventory</b> Carcinogen Category 1, 1A or 1B - Known or presumed human carcinogen	<b>ECHA C&amp;L Inventory</b> Carcinogen Category 2 - Suspected human carcinogens	
17	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc.</b> Strong evidence of carcinogenicity	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR) etc.</b> Indication of carcinogenicity	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR) etc.</b> Indication of no carcinogenicity

## Appendix 8: Chemical Ranking Criteria

		Human Health: Mutagenicity/Genotoxicity	
		High (H)	Moderate (M)
			Low (L)
<b>Step I Sources</b>			
#	<b>Priority Sources</b>		
3	EU - SVHC Authorisation List Mutagenic - Banned unless Authorised Mutagenic - Candidate list Mutagenic - Prioritized for listing		
7	EU - Annex VI CMRs Mutagen - Category 1A Mutagen - Category 1B	EU - Annex VI CMRs Mutagen - Category 2	
8	EU - GHS (H-Statements) H340 - May cause genetic defects	EU - GHS (H-Statements) H341 - Suspected of causing genetic defects	
9	EU - REACH Annex XVII CMRs Mutagen Category 1 - Substances known to be Mutagenic to man Mutagen Category 2 - Substances which should be regarded as if they are Mutagenic to man	EU - REACH Annex XVII CMRs Category 3 - Substances which cause concern for man owing to possible mutagenic effects	
10	EU - R-phrases R46 - May cause heritable genetic damage	EU - R-phrases R68 - May cause irreversible effects	
11	MAK Germ Cell Mutagen 1 Germ Cell Mutagen 2 Germ Cell Mutagen 3a	MAK Germ Cell Mutagen 3b Germ Cell Mutagen 5	
#	<b>Secondary Sources</b>		
12	Japan - GHS Germ cell mutagenicity - Category 1, 1A or 1B	Japan - GHS Germ cell mutagenicity - Category 2	Japan - GHS Not classified (sufficient information; chemical is not problematic)
13	Korea - GHS Germ cell mutagenicity - Category 1, 1A or 1B [H340 - May cause genetic defects]	Korea - GHS Germ cell mutagenicity - Category 2 [H341 - Suspected of causing genetic defects]	
14	New Zealand - GHS 6.6A - Known or presumed human mutagens	New Zealand - GHS 6.6B - Suspected human mutagens	
<b>Step II Sources</b>			
15	ISSCAN SAL Value: Ranking = 3, Mutagenic	ISSCAN SAL Value: Ranking = 2, Undetermined or equivocal	ISSCAN SAL Value: Ranking = 1, Non-mutagenic
16	ECHA C&L Inventory Category 1, 1A, or 1B: Known/Presumed to induce heritable mutations	ECHA C&L Inventory Category 2: Suspected to induce heritable mutations	
17	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Strong evidence of mutagenicity/genotoxicity	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Indication of mutagenicity/genotoxicity	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Adequate data available and negative studies

## Appendix 8: Chemical Ranking Criteria

		Human Health: Reproductive Toxicity		
		High (H)	Moderate (M)	Low (L)
<b>Step I Sources</b>				
<b>#</b>	<b>Priority Sources</b>			
2	<b>CA EPA - Prop 65</b> Developmental Toxicity - Female (may include additional qualifications) Developmental Toxicity - Male (may include additional qualifications)			
3	<b>EU - SVHC Authorisation List<sup>1</sup></b> Toxic to reproduction - Banned unless Authorised Toxic to reproduction - Candidate list Toxic to reproduction - Prioritized for listing			
7	<b>EU - Annex VI CMRs</b> Reproductive Toxicity - Category 1A Reproductive Toxicity - Category 1B	<b>EU - Annex VI CMRs</b> Reproductive Toxicity - Category 2		
8	<b>EU - GHS (H-Statements)</b> H360 - May damage fertility or the unborn child H360F - May damage fertility H360FD - May damage fertility. May damage the unborn child H360Fd - May damage fertility. Suspected of damaging the unborn child	<b>EU - GHS (H-Statements)</b> H360Df - May damage fertility. Suspected of damaging the unborn child H361 - Suspected of damaging fertility or the unborn child H361f - Suspected of damaging fertility H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child		
9	<b>EU - REACH Annex XVII CMRs</b> Toxic to Reproduction Category 1 - Substances known to impair fertility or cause Developmental Toxicity in humans Toxic to Reproduction Category 2 - Substances which should be regarded as if they impair fertility or cause Developmental Toxicity in humans	<b>EU - REACH Annex XVII CMRs</b> Toxic to Reproduction Category 3: Suspected to impair fertility or cause Developmental Toxicity in humans		
10	<b>EU - R-phrases</b> R60 - May impair fertility	<b>EU - R-phrases</b> R62 - Possible risk of impaired fertility		
18	<b>US NIH - Reproductive &amp; Developmental Monographs</b> Clear Evidence of Adverse Effects - Reproductive Toxicity Some Evidence of Adverse Effects - Reproductive Toxicity Limited Evidence of Adverse Effects - Reproductive Toxicity	<b>US NIH - Reproductive &amp; Developmental Monographs</b> Limited Evidence of no Adverse Effects - Reproductive Toxicity Some Evidence of no Adverse Effects - Reproductive Toxicity Insufficient Evidence for a Conclusion - Reproductive Toxicity	<b>US NIH - Reproductive &amp; Developmental Monographs</b> Clear Evidence of no Adverse Effects - Reproductive Toxicity	
<b>Secondary Sources</b>				
12	<b>Japan - GHS</b> Toxic to reproduction - Category 1, 1A or 1B	<b>Japan - GHS</b> Toxic to reproduction - Category 2	<b>Japan - GHS</b> Not classified (sufficient information; chemical is not problematic)	
13	<b>Korea - GHS</b> Reproductive toxicity - Category 1, 1A or 1B: [H360 - May damage fertility or the unborn child]	<b>Korea - GHS</b> Reproductive toxicity - Category 2 [H361 - Suspected of damaging fertility or the unborn child]		
14	<b>New Zealand - GHS</b> 6.8A - Known or presumed human reproductive or developmental toxicants 6.8C - Produce toxic human reproductive or developmental effects on or via lactation	<b>New Zealand - GHS</b> 6.8B - Suspected human reproductive or developmental toxicants		
<b>Step II Sources</b>				
16	<b>ECHA C&amp;L Inventory</b> Use classification (e.g., Category 1) or H-Statement as shown in Step I above	<b>ECHA C&amp;L Inventory</b> Use classification (e.g., Category 2) or H-Statement as shown in Step I above		
17	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc.</b> Strong evidence of reproductive toxicity	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc.</b> Indication of reproductive toxicity	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc.</b> Indication of no reproductive toxicity	
19	<b>EPA Characterization Criteria:</b> LOAEL, TD <sub>10</sub> or TC <sub>10</sub> Values Oral < 50 mg/kg-bw/d Dermal < 100 mg/kg-bw/d Inhalation (vapor) < 1.0 mg/L/d Inhalation (dust/mist/fume) < 0.1 mg/L/d Inhalation (gas) < 50 ppm/d	<b>EPA Characterization Criteria:</b> LOAEL, TD <sub>10</sub> or TC <sub>10</sub> Values Oral ≥ 50 but < 250 mg/kg-bw/d Dermal ≥ 100 but < 500 mg/kg-bw/d Inhalation (vapor) ≥ 1.0 but < 2.5 mg/L/d Inhalation (dust/mist/fume) ≥ 0.1 but < 0.5 mg/L/d Inhalation (gas) ≥ 50 but < 250 ppm/d	<b>EPA Characterization Criteria:</b> LOAEL, TD <sub>10</sub> or TC <sub>10</sub> Values Oral ≥ 250 mg/kg-bw/d Dermal ≥ 500 mg/kg-bw/d Inhalation (vapor) ≥ 2.5 mg/L/d Inhalation (dust/mist/fume) ≥ 0.5 mg/L/d Inhalation (gas) ≥ 250 ppm/d	

<sup>1</sup> ECHA listings and EU CMRs include both reproductive and developmental effects in one grouping under a broad definition of “Reproductive toxicity”. For the purposes of QCAT, the distinction between whether these are listings are actually due to reproductive or developmental effects is left for a more detailed assessment such as the GS<sup>®</sup>. The QCAT will assume that all of the effects are grouped here.

## Appendix 8: Chemical Ranking Criteria

Human Health: Developmental (including Developmental Neurotoxicity)			
	High (H)	Moderate (M)	Low (L)
<b>Step I Sources</b>			
<b>#</b>	<b>Priority Sources</b>		
2	CA EPA - Prop 65 Developmental toxicity Developmental (form-specific or based on limited exposure pathways)		
3	EU - SVHC Authorisation List Toxic to reproduction - Banned unless Authorised (if identified due to developmental toxicity) Toxic to reproduction - Candidate list (if identified due to developmental toxicity) Toxic to reproduction - Prioritized for listing (if identified due to developmental toxicity)		
8	EU - GHS (H-Statements) H360D - May damage the unborn child H360Df - May damage the unborn child H360FD - May damage the unborn child H362 - May cause harm to breast-fed children	EU - GHS (H-Statements) H360Fd - May damage fertility. Suspected of damaging the unborn child. H361 - Suspected of damaging fertility or the unborn child H361d - Suspected of damaging the unborn child H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child.	
10	EU - R-phrases R61 - May cause harm to the unborn child R64 - May cause harm to breastfed babies	EU - R-phrases R63 - Possible risk of harm to the unborn child	
11	MAK Pregnancy Risk Group A Pregnancy Risk Group B	MAK Pregnancy Risk Group C Pregnancy Risk Group D	
18	US NIH - Reproductive & Developmental Monographs Clear Evidence of Adverse Effects - Developmental Toxicity Some Evidence of Adverse Effects - Developmental Toxicity Limited Evidence of Adverse Effects - Developmental Toxicity	US NIH - Reproductive & Developmental Monographs Some Evidence of no Adverse Effects - Developmental Toxicity Limited Evidence of no Adverse Effects - Developmental Toxicity Insufficient Evidence for a Conclusion - Developmental Toxicity	US NIH - Reproductive & Developmental Monographs Clear Evidence of no Adverse Effects - Developmental Toxicity
<b>#</b>	<b>Secondary Sources</b>		
12	Japan - GHS Category 1, 1A or 1B: Known/Presumed to induce developmental toxicity	Japan - GHS Category 2: Suspected to induce developmental toxicity	Japan - GHS Not classified (sufficient information; chemical is not problematic)
13	Korea - GHS Category 1, 1A or 1B: Known/Presumed to induce developmental toxicity	Korea - GHS Category 2: Suspected to induce developmental toxicity H362: May cause harm to breast-fed children	
14	New Zealand - GHS 6.8A or 6.8C - Indication of developmental toxicity	New Zealand - GHS 6.8B - Indication of developmental toxicity	
19	Boyes - Neurotoxicants Developmental Neurotoxicity		
20	G&L - Neurotoxic Chemicals Developmental Neurotoxicant Developmental Neurotoxicant (2014)		
<b>Step II Sources</b>			
16	ECHA C&L Inventory Use classification (e.g., Category 1) or H-Statement as shown in Step I above	ECHA C&L Inventory Use classification (e.g., Category 1) or H-Statement as shown in Step I above	
17	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Strong evidence of developmental toxicity	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Indication of developmental toxicity	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Indication of no developmental toxicity

## Appendix 8: Chemical Ranking Criteria

		Human Health: Endocrine Activity		
		High (H)	Moderate (M)	Low (L)
<b>Step I Sources</b>				
#	<b>Priority Sources</b>			
3	EU - SVHC Authorisation List Equivalent Concern - Banned unless Authorised Equivalent Concern - Candidate list Equivalent Concern - Prioritized for listing			
#	<b>Secondary Sources</b>			
21	EU - Priority Endocrine Disrupters Category 1 - In vivo evidence of Endocrine Disruption Activity Category 2 - In vitro evidence of biological activity related to Endocrine Disruption	EU - Priority Endocrine Disrupters Category 3b (Substances with no or insufficient data gathered)	EU - Priority Endocrine Disrupters Category 3a (ED Studies available but no indication of ED effects)	
22	OSPAR - Priority PBTs & EDs & equivalent concern Endocrine Disruptor - Chemical for Priority Action Endocrine Disruptor - Substance of Possible Concern			
23	ChemSec - SIN List Endocrine Disruption			
24	TEDX - Potential Endocrine Disruptors Potential Endocrine Disruptor			
<b>Step II Sources</b>				
17	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Evidence of endocrine activity & related human health effect	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Some evidence of endocrine activity and effects	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc. Adequate data available-evidence of no endocrine activity	

## Appendix 8: Chemical Ranking Criteria

		Human Health: Acute Mammalian Toxicity			
		Very High (v)	High (H)	Moderate (M)	Low (L)
<b>Step I Sources</b>					
#	<b>Priority Sources</b>				
8	<b>EU - GHS (H-Statements)</b> H300 - Fatal if swallowed H310 - Fatal in contact with skin H330 - Fatal if inhaled	<b>EU - GHS (H-Statements)</b> H301 - Toxic if swallowed H311 - Toxic in contact with skin H331 - Toxic if inhaled	<b>EU - GHS (H-Statements)</b> H302 - Harmful if swallowed H312 - Harmful in contact with skin H332 - Harmful if inhaled	<b>EU - GHS (H-Statements)</b> H303 - May be harmful if swallowed H313 - May be harmful in contact with skin H333 - May be harmful if inhaled	
10	<b>EU - R-phrases</b> R26 - Very Toxic by Inhalation R27 - Very Toxic in Contact with Skin R28 - Very Toxic if Swallowed	<b>EU - R-phrases</b> R23 - Toxic by Inhalation (gas, vapour, dust/mist) R24 - Toxic in Contact with Skin R25 - Toxic if Swallowed	<b>EU - R-phrases</b> R20 - Harmful by Inhalation (gas or vapor or dust/mist) R21 - Harmful in Contact with Skin R22 - Harmful if Swallowed		
26	<b>US EPA - EPCRA Extremely Hazardous Substances</b> Extremely Hazardous Substances				
#	<b>Secondary Sources</b>				
12	<b>Japan - GHS</b> Acute toxicity (dermal) - Category 1 Acute toxicity (inhalation: dust, mist) - Category 1 Acute toxicity (inhalation: gas) - Category 1 Acute toxicity (inhalation: vapor) - Category 1 Acute toxicity (oral) - Category 1 Acute toxicity (dermal) - Category 2 Acute toxicity (inhalation: dust, mist) - Category 2 Acute toxicity (inhalation: gas) - Category 2 Acute toxicity (inhalation: vapor) - Category 2 Acute toxicity (oral) - Category 2	<b>Japan - GHS</b> Acute toxicity (dermal) - Category 3 Acute toxicity (inhalation: dust, mist) - Category 3 Acute toxicity (inhalation: gas) - Category 3 Acute toxicity (inhalation: vapor) - Category 3 Acute toxicity (oral) - Category 3	<b>Japan - GHS</b> Acute toxicity (dermal) - Category 4 Acute toxicity (inhalation: dust, mist) - Category 4 Acute toxicity (inhalation: gas) - Category 4 Acute toxicity (inhalation: vapor) - Category 4 Acute toxicity (oral) - Category 4	<b>Japan - GHS</b> Acute toxicity (dermal) - Category 5 Acute toxicity (inhalation: dust, mist) - Category 5 Acute toxicity (inhalation: gas) - Category 5 Acute toxicity (inhalation: vapor) - Category 5 Acute toxicity (oral) - Category 5	
13	<b>Korea - GHS</b> Acute toxicity (dermal) - Category 1 [H310 - Fatal in contact with skin] Acute toxicity (inhalation) - Category 1 [H330 - Fatal if inhaled] Acute toxicity (oral) - Category 1 [H300 - Fatal if swallowed] Acute toxicity (dermal) - Category 2 [H310 - Fatal in contact with skin] Acute toxicity (inhalation) - Category 2 [H330 - Fatal if inhaled] Acute toxicity (oral) - Category 2 [H300 - Fatal if swallowed]	<b>Korea - GHS</b> Acute toxicity (dermal) - Category 3 [H311 - Toxic in contact with skin] Acute toxicity (inhalation) - Category 3 [H331 - Toxic if inhaled] Acute toxicity (oral) - Category 3 [H301 - Toxic if swallowed]	<b>Korea - GHS</b> Acute toxicity (dermal) - Category 4 [H312 - Harmful in contact with skin] Acute toxicity (inhalation) - Category 4 [H332 - Harmful if inhaled] Acute toxicity (oral) - Category 4 [H302 - Harmful if swallowed]		
14	<b>New Zealand - GHS</b> 6.1A (dermal) - Acutely toxic 6.1A (inhalation) - Acutely toxic 6.1A (oral) - Acutely toxic 6.1B (dermal) - Acutely toxic 6.1B (inhalation) - Acutely toxic 6.1B (oral) - Acutely toxic	<b>New Zealand - GHS</b> 6.1C (dermal) - Acutely toxic 6.1C (inhalation) - Acutely toxic 6.1C (oral) - Acutely toxic	<b>New Zealand - GHS</b> 6.1D (dermal) - Acutely toxic 6.1D (inhalation) - Acutely toxic 6.1D (oral) - Acutely toxic	<b>New Zealand - GHS</b> 6.1E (dermal) - Acutely toxic 6.1E (inhalation) - Acutely toxic 6.1E (oral) - Acutely toxic	
27	<b>Québec CSST - WHMIS 1998</b> Class D1A - Very toxic material causing immediate and serious toxic effects	<b>Québec CSST - WHMIS 1998</b> Class D1B - Toxic material causing immediate and serious toxic effects			
<b>Step II Sources</b>					
16	<b>ECHA C&amp;L Inventory</b> Use classification (e.g., Category 1 or 2) or H-Statement as shown in Step I above	<b>ECHA C&amp;L Inventory</b> Use classification (e.g., Category 3) or H-Statement as shown in Step I above	<b>ECHA C&amp;L Inventory</b> Use classification (e.g., Category 4) or H-Statement as shown in Step I above	<b>ECHA C&amp;L Inventory</b> Use classification (e.g., Category 5) or H-Statement as shown in Step I above	
17	N/A	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc.</b> Strong evidence of acute mammalian toxicity	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc.</b> Indication of acute mammalian toxicity	<b>EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), etc.</b> Indication of no acute mammalian toxicity	
19	<b>Technical Criteria</b> Oral LD <sub>50</sub> ≤ 50 mg/kg bw Dermal LD <sub>50</sub> ≤ 200 mg/kg bw Inhalation (g) LC <sub>50</sub> ≤ 500 ppm Inhalation (v) LC <sub>50</sub> ≤ 2.0 mg/l Inhalation (dust, mist) LC <sub>50</sub> ≤ 0.5 mg/l	<b>Technical Criteria</b> Oral LD <sub>50</sub> > 50 but ≤ 300 mg/kg bw Dermal LD <sub>50</sub> > 200 but ≤ 1,000 mg/kg bw Inhalation (g) LC <sub>50</sub> > 500 but ≤ 2,500 ppm Inhalation (v) LC <sub>50</sub> > 2.0 but ≤ 10.0 mg/l Inhalation (dm) LC <sub>50</sub> > 0.5 but ≤ 1.0 mg/l	<b>Technical Criteria</b> Oral LD <sub>50</sub> > 300 but ≤ 2,000 mg/kg bw Dermal LD <sub>50</sub> > 1,000 but ≤ 2,000 mg/kg bw Inhalation (g) LC <sub>50</sub> > 2,500 but ≤ 20,000 ppm Inhalation (v) LC <sub>50</sub> > 10.0 but ≤ 20.0 mg/l Inhalation (dm) LC <sub>50</sub> > 1.0 but ≤ 5.0 mg/l	<b>Technical Criteria</b> Oral LD <sub>50</sub> > 2,000 mg/kg bw Dermal LD <sub>50</sub> > 2,000 mg/kg bw Inhalation (g) LC <sub>50</sub> > 20,000 ppm Inhalation (v) LC <sub>50</sub> > 20.0 mg/l Inhalation (dm) LC <sub>50</sub> > 5.0 mg/l	

## Appendix 8: Chemical Ranking Criteria

Environmental Health: Acute Aquatic Toxicity				
	Very High (v)	High (H)	Moderate (M)	Low (L)
<b>Step I Sources</b>				
<b>#</b>	<b>Priority Sources</b>			
8	EU - GHS (H-Statements) H400 - Very toxic to aquatic life			
10	EU - R-phrases R50 - Very Toxic to Aquatic Organisms	EU - R-phrases R51 - Toxic to Aquatic Organisms R52 - Harmful to Aquatic Organisms R51/53 - Toxic to Aquatic Organisms, May cause long-term adverse effects in the aquatic environment	EU - R-phrases R53 - May cause long-term adverse effects in the aquatic environment R52/53 - Harmful to Aquatic Organisms, May cause long-term adverse effects in the aquatic environment	
<b>#</b>	<b>Secondary Sources</b>			
12	Japan – GHS Hazardous to the aquatic environment (acute) - Category 1	Japan – GHS Hazardous to the aquatic environment (acute) - Category 2	Japan – GHS Hazardous to the aquatic environment (acute) - Category 3	Japan – GHS Not classified (sufficient information; chemical is not problematic)
13	Korea – GHS Hazardous to the aquatic environment (acute) - Category 1 [H400 - Very toxic to aquatic life]			
14	New Zealand - GHS 9.1A (algal) - Very ecotoxic in the aquatic environment 9.1A (crustacean) - Very ecotoxic in the aquatic environment 9.1A (fish) - Very ecotoxic in the aquatic environment 9.1A (other) - Very ecotoxic in the aquatic environment	New Zealand - GHS 9.1B (algal) - Ecotoxic in the aquatic environment 9.1B (crustacean) - Ecotoxic in the aquatic environment 9.1B (fish) - Ecotoxic in the aquatic environment 9.1B (other) - Ecotoxic in the aquatic environment	New Zealand – GHS 9.1C (algal) -: Harmful to aquatic environment 9.1C (crustacean) -: Harmful to aquatic environment 9.1C (fish) - Harmful to aquatic environment 9.1C (other) - Harmful to aquatic environment	New Zealand - GHS 9.1D (algal) - Slightly harmful in the aquatic environment 9.1D (crustacean) - Slightly harmful in the aquatic environment 9.1D (fish) - Slightly harmful in the aquatic environment 9.1D (other) - Slightly harmful in the aquatic environment
28	EC - CEPA DSL Inherently Toxic in the Environment			
<b>Step II Sources</b>				
16	ECHA C&L Inventory Category Acute 1	ECHA C&L Inventory Category Acute 2 not implemented	ECHA C&L Inventory Category Acute 3 not implemented	
17	N/A	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA ECOTOX, etc. Strong evidence of acute aquatic toxicity	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA ECOTOX, etc. Indication of acute aquatic toxicity	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA ECOTOX, etc. Indication of no acute aquatic toxicity
19	Technical Criteria 96 hr LC <sub>50</sub> (f) <sup>2</sup> ≤ 1 mg/l 48 hr EC <sub>50</sub> (c) <sup>3</sup> ≤ 1 mg/l 72 or 96 ErC <sub>50</sub> (a) <sup>4</sup> ≤ 1 mg/l	Technical Criteria 96 hr LC <sub>50</sub> (f) > 1 but ≤ 10 mg/l 48 hr EC <sub>50</sub> (c) > 1 but ≤ 10 mg/l 72 or 96 ErC <sub>50</sub> (a) > 1 but ≤ 10 mg/l	Technical Criteria 96 hr LC <sub>50</sub> (f) > 10 but ≤ 100 mg/l 48 hr EC <sub>50</sub> (c) > 10 but ≤ 100 mg/l 72 or 96 ErC <sub>50</sub> (a) > 10 but ≤ 100 mg/l	Technical Criteria 96 hr LC <sub>50</sub> (f) > 100 mg/l 48 hr EC <sub>50</sub> (c) > 100 mg/l 72 or 96 ErC <sub>50</sub> (a) > 100 mg/l

<sup>2</sup>f = fish<sup>3</sup>c = crustacea<sup>4</sup>a = algae or other aquatic plants

## Appendix 8: Chemical Ranking Criteria

Environmental Fate: Persistence					
	Very High (v)	High (H)	Moderate (M)	Low (L)	Very Low (vL)
<b>Step I Sources</b>					
<b>#</b>	<b>Priority Sources</b>				
3	EU - SVHC Authorisation List PBT - Banned unless Authorised PBT - Candidate list PBT - Prioritized for listing vPvB - Candidate list vPvB - Banned unless Authorised vPvB - Prioritized for listing				
25	OSPAR - Priority PBTs & EDs & equivalent concern PBT - Chemical for Priority Action	OSPAR - Priority PBTs & EDs & equivalent concern PBT - Substance of Possible Concern PBT - Substance of Possible Concern (Sections B&C)			
29	US EPA - Priority PBTs (NWMP) Priority PBT				
30	US EPA Priority PBTs (PPT) Priority PBT				
31	US EPA - Toxics Release Inventory PBTs PBT				
32	EU - ESIS PBT Fulfills PBT Criteria - Action Deferred PBT POP (Persistent Organic Pollutant) vPvB PBT & POP PBT & vPvB PBT & vPvB & POP Under PBT evaluation				
33	UNEP Stockholm Conv - Persistent Organic Pollutants Priority POP Persistent Organic Pollutant (POP) - under review				
<b>#</b>	<b>Secondary Sources</b>				
23	ChemSec - SIN List PBT / vPvB (Persistent, Bioaccumulative, & Toxic / very Persistent & very Bioaccumulative)				
28	EC - CEPA DSL Persistent Persistent, Bioaccumulative and inherently Toxic (PBiTH) to humans Persistent, Bioaccumulative and inherently Toxic (PBiTE) to the Environment (based on aquatic organisms)				
34	WA DoE - PBT PBT				
35	OR DEQ - Priority Persistent Pollutants Priority Persistent Pollutant - Tier 1 Priority Persistent Pollutant - Tier 2 Legacy Persistent Pollutants				
<b>Step II Sources</b>					
17	N/A	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA PBT Profiler, etc. Strong evidence of persistence	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA PBT Profiler, etc. Indication of persistence	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA PBT Profiler, etc. Indication of no persistence Meets GHS Definition for Rapid Degradability	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA PBT Profiler, etc. Indication of no persistence Meets 10-day window as measured in a ready biodegradation
19	<b>Technical Criteria</b> Half-life (ss <sup>5</sup> ) > 180 days Half-life (w <sup>6</sup> ) > 60 days Half-life (a <sup>7</sup> ) > 5 days	<b>Technical Criteria</b> Half-life (ss) > 60 to 180 days Half-life (w) > 40 to 60 days Half-life (a <sup>8</sup> ) > 2 to 5 days Evidence for long-range environmental transport	<b>Technical Criteria</b> Half-life (ss) > 16 to 60 days Half-life (w) > 16 to 40 days Suggestive evidence for long-range environmental transport	<b>Technical Criteria</b> Half-life (ss) < 16 days Half-life (w) < 16 days Half-life (a) < 2 days	

<sup>5</sup>ss = soil or sediment

<sup>6</sup>w = water

<sup>7</sup>a = air

<sup>8</sup>a = air

## Appendix 8: Chemical Ranking Criteria

Environmental Fate: Bioaccumulation					
	Very High (v)	High (H)	Moderate (M)	Low (L)	Very Low (vL)
<b>Step I Sources</b>					
<b>#</b>	<b>Priority Sources</b>				
3	EU - SVHC Authorisation List PBT - Banned unless Authorised PBT - Candidate list PBT - Prioritized for listing vPvB - Candidate list vPvB - Banned unless Authorised vPvB - Prioritized for listing				
25	OSPAR - Priority PBTs & EDs & equivalent concern PBT - Chemical for Priority Action	OSPAR - Priority PBTs & EDs & equivalent concern PBT - Substance of Possible Concern PBT - Substance of Possible Concern (Sections B&C)			
29	US EPA - Priority PBTs (NWMP) Priority PBT				
30	US EPA Priority PBTs (PPT) Priority PBT				
31	US EPA - Toxics Release Inventory PBTs PBT				
32	EU - ESIS PBT Fulfills PBT Criteria - Action Deferred PBT POP (Persistent Organic Pollutant) vPvB PBT & POP PBT & vPvB PBT & vPvB & POP Under PBT evaluation				
33	UNEP Stockholm Conv - Persistent Organic Pollutants Priority POP Persistent Organic Pollutant (POP) - under review				
<b>#</b>	<b>Secondary Sources</b>				
23	ChemSec - SIN List PBT / vPvB (Persistent, Bioaccumulative, & Toxic / very Persistent & very Bioaccumulative)				
28	EC - CEPA DSL Bioaccumulative Persistent, Bioaccumulative and inherently Toxic (PBiTH) to humans Persistent, Bioaccumulative and inherently Toxic (PBiTE) to the Environment (based on aquatic organisms)				
34	WA DoE - PBT PBT				
<b>Step II Sources</b>					
17	N/A	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA PBT Profiler, etc. Strong evidence of bioaccumulation	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA PBT Profiler, etc. Indication of bioaccumulation	EU RA, IUCLID Datasheet, RTECS, HSDB, UNEP SIDS, OSHA, Danish Q(SAR), US EPA PBT Profiler, etc. Indication of no bioaccumulation	
19	<b>Technical Criteria</b> BCF/BAF $\geq$ 5,000 Log $K_{ow}$ <sup>9</sup> $\geq$ 5	<b>Technical Criteria</b> BCF/BAF $\geq$ 1,000 but $<$ 5,000 Log $K_{ow}$ $\geq$ 4.5 but $<$ 5 Weight of evidence-presence in humans & wildlife	<b>Technical Criteria</b> BCF/BAF $\geq$ 500 but $<$ 1,000 Log $K_{ow}$ $\geq$ 4 but $<$ 4.5 Suggestive evidence-presence in humans & wildlife	<b>Technical Criteria</b> BCF/BAF $\geq$ 100 but $<$ 500	<b>Technical Criteria:</b> BCF/BAF $<$ 100 Log $K_{ow}$ $<$ 4

<sup>9</sup> Log  $K_{ow}$  = logarithm of the octanol/water partition coefficient