

APPENDIX V-D

**LIST OF PROPOSED REFERENCE SUBSTANCES FOR VALIDATION
STUDIES OF *IN VITRO* TEST METHODS FOR THE
IDENTIFICATION OF OCULAR CORROSIVES/SEVERE IRRITANTS
(SORTED BY PRODUCT CLASS, AND SUBSTANCE NAME)**

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Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Adjuvant, Solubilier, Wetting Agent	2A	7	Di(2-ethylhexyl)sodium sulfosuccinate	577-11-7	444.6	Ester, Organophosphorus Compound	Liquid
Anesthetics	1 (H)	-	Chloroform	67-66-3	119.4	Hydrocarbon (acyclic)	Liquid
Anesthetics	1	4	Cyclohexyl isocyanate	3173-53-3	125.2	Isocyanate	Liquid
Anti-Fungals	1 (H)	-	Ammonia	7664-41-7	17.0	Alkali	Liquid
Anti-Fungals	1	4	2-Benzyl-4-chlorophenol	120-32-1	218.7	Phenol	Solid
Anti-Fungals	2A	-	2,6-Dichlorobenzoyl chloride	4659-45-4	209.5	Acyl Halide	Liquid
Anti-Fungals	1	4	Granuform	30525-89-4	30.0	Aldehyde, Ether	Solid
Anti-Fungals	NI	-	Imidazole	288-32-4	68.1	Hydrocarbon (halogenated)	Solid
Anti-Fungals	1	4	1,2,4-Triazole, sodium salt	41253-21-8	91.1	Heterocyclic Compound, Salt (organic)	Solid
Anti-Infectives	1	4	Benzethonium chloride	121-54-0	448.1	Amine, Onium Compound	Liquid
Anti-Infectives	1	4	2-Benzyl-4-chlorophenol	120-32-1	218.7	Phenol	Solid
Anti-Infectives	1, 2A	2	Cetylpyridinium bromide	140-72-7	384.4	Onium Compound, Heterocyclic Compound	Liquid
Anti-Infectives	1	4	Chlorhexidine	55-56-1	505.4	Amidine	Solid
Anti-Infectives	2A	-	Deoxycholic acid sodium salt	302-95-4	414.6	Alcohol, Acid (organic) [carboxylic acid], Salt (organic), Polycyclic Compound	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Anti-Infectives	2A	-	2,6-Dichlorobenzoyl chloride	4659-45-4	209.5	Acyl Halide	Liquid
Anti-Infectives	1	4	Domiphen bromide	538-71-6	414.5	Ether, Onium Compound, Salt (organic)	Liquid
Anti-Infectives	1	4	Granuform	30525-89-4	30.0	Aldehyde, Ether	Solid
Anti-Infectives	1 (H)	-	Silver nitrate	7761-88-8	169.9	Nitrate, Salt (inorganic)	Liquid
Anti-Infectives	1 (H)	-	Sodium hydrogen difluoride	1333-83-1	62.0	Salt (inorganic)	Liquid
Anti-Infectives	1	4	N,N,N',N' -Tetramethyl hexanediamine	111-18-2	172.3	Amine	Liquid
Anti-Infectives	1 (H)	-	Zinc chloride	7646-85-7	136.3	Salt (inorganic)	Solid
Battery Acid	1 (H)	-	Sulfuric acid	7664-93-9	98.1	Acid (inorganic), Sulfur Compound (inorganic)	Liquid
Building Materials	NI	-	Iso-octyl acrylate	29590-42-9	184.3	Ester	Liquid
Building Materials	1 (H)	-	Lime	1305-78-8	56.1	Salt (inorganic)	Solid
Caustic Agents	1	4	Sodium hydroxide	1310-73-2	40.0	Alkali	Liquid
Caustic Agents	1	4	Trichloroacetic acid	76-03-9	163.4	Acid (organic) [carboxylic acid]	Liquid
Chemical Intermediates	2A	-	Methyl acetate	79-20-9	74.1	Ester	Liquid
Chemical Intermediates	2B	-	Ethyl-2-methyl acetoacetate	609-14-3	144.2	Ester, Ketone	Solid
Chemical Intermediates	2A	-	Acetone	67-64-1	58.1	Ketone	Liquid-
Chemical Intermediates	1	4	Methoxyethyl acrylate	3121-61-7	130.1	Ester, Ether	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Chemical Intermediates	1	4	Aluminum chloride	16603-84-2	98.9	Salt (inorganic)	Liquid
Chemical Intermediates	NI	-	tetra-Aminopyrimidine sulfate	5392-28-9	238.2	Amine, Heterocyclic Compound, Salt (organic)	Solid
Chemical Intermediates	1 (H)	-	Ammonia	7664-41-7	17.0	Alkali	Liquid
Chemical Intermediates	1	4	Benzenesulfonyl chloride	98-09-9	176.6	Acyl Halide, Sulfur Compound (organic)	Liquid
Chemical Intermediates	2A	-	Benzotrichloride	98-07-7	195.5	Hydrocarbon (cyclic)	Liquid
Chemical Intermediates	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid
Chemical Intermediates	1	4	4-tert-Butylcatechol	98-29-3	166.2	Phenol	Liquid
Chemical Intermediates	1	4	p-tert-Butylphenol	98-54-4	150.2	Phenol	Solid
Chemical Intermediates	1 (H)	-	Chloroform	67-66-3	119.4	Hydrocarbon (acyclic)	Liquid
Chemical Intermediates	2B	-	3-Chloropropionitrile	542-76-7	89.5	Nitrile	Liquid
Chemical Intermediates	1	4	Cyclohexyl isocyanate	3173-53-3	125.2	Isocyanate	Liquid
Chemical Intermediates	1	1	3,4-Dichlorophenyl isocyanate	102-36-3	188.1	Isocyanate	Liquid
Chemical Intermediates	1	4	Diethylethanolamine	100-37-8	117.9	Amine, Alcohol	Liquid
Chemical Intermediates	1	1	2,5-Dimethylhexanediol	110-03-2	146.2	Alcohol	Solid
Chemical Intermediates	2B	-	3,3-Dithiopropionic acid	1119-62-6	210.3	Acid (organic) [carboxylic acid], Organosilicon Compound	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Chemical Intermediates	NI	-	2-(n-Dodecylthio)ethanol	1462-55-1	206.3	Alcohol, Ether, Sulfur Compound (organic)	Solid
Chemical Intermediates	1	4	Hydroxyethyl acrylate	818-61-1	116.1	Alcohol, Ester	Liquid
Chemical Intermediates	NI	-	iso-Propyl bromide	75-26-3	123.0	Hydrocarbon (halogenated)	Liquid
Chemical Intermediates	1	4	alpha-Ketoglutaric acid	328-50-7	146.1	Acid (organic) [carboxylic acid]	Solid
Chemical Intermediates	1 (H)	-	Lime	1305-78-8	56.1	Salt (inorganic)	Solid
Chemical Intermediates	1 (H)	-	Magnesium hydroxide	12141-11-6	42.3	Salt (inorganic)	Solid
Chemical Intermediates	1	4	4-Chloro-methanilic acid	98-36-2	207.6	Amine, Sulfur Compound (organic)	Solid
Chemical Intermediates	2A	-	Methyl cyanoacetate	105-34-0	99.1	Ester, Nitrile	Liquid
Chemical Intermediates	1	4	2-Methylbutyric acid	116-53-0	102.1	Acid (organic) [carboxylic acid]	Liquid
Chemical Intermediates	1 (H)	-	Nitric acid	7697-37-2	63.0	Acid, Salt (inorganic)	Liquid
Chemical Intermediates	1	4	n-Octylamine	111-86-4	129.2	Amine	Liquid
Chemical Intermediates	NI	-	2,4-Pentanediol	625-69-4	104.2	Alcohol	Liquid
Chemical Intermediates	1	2	4-(1,1,3,3-Tetramethylbutyl)phenol	140-66-9	206.3	Phenol	Solid
Chemical Intermediates	1	4	Phosphorodichloridic acid, ethyl ester	1498-51-7	162.9	Ester, Organophosphorus Compound	Liquid
Chemical Intermediates	1 (H)	-	Potassium hydroxide	1310-58-3	56.1	Alkali, Salt (inorganic)	Solid
Chemical Intermediates	1	4	beta-Resorcylic acid	89-86-1	154.1	Acid (organic) [carboxylic acid], Phenol	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Chemical Intermediates	1 (H)	-	Silver nitrate	7761-88-8	169.9	Nitrate, Salt (inorganic)	Liquid
Chemical Intermediates	1	4	Sodium hydroxide	1310-73-2	40.0	Alkali	Liquid
Chemical Intermediates	1 (H)	-	Sulfuric acid	7664-93-9	98.1	Acid (inorganic), Sulfur Compound (inorganic)	Liquid
Chemical Intermediates	1	3	Dibenzoyl-L-tartaric acid	2743-38-6	358.3	Acid (organic) [Carboxylic Acid], Ester	Solid
Chemical Intermediates	1	4	Tetraethylene glycol diacrylate	17831-71-9	302.3	Ether, Nitro Compound	Liquid
Chemical Intermediates	1	4	Tetrahydrofuran	109-99-9	72.1	Ether, Heterocyclic Compound	Liquid
Chemical Intermediates	NI	-	Toluene	108-88-3	92.1	Hydrocarbon (cyclic)	Liquid
Chemical Intermediates	1	4	Trichloroacetyl chloride	76-02-8	163.4	Acyl Halide	Liquid
Cleaners or Cleaning Agents	2A	-	Acetone	67-64-1	58.1	Ketone	Liquid
Cleaners or Cleaning Agents	1 (H)	-	Ammonia	7664-41-7	17.0	Alkali	Liquid
Cleaners or Cleaning Agents	1 (H)	-	Chloroform	67-66-3	119.4	Hydrocarbon (acyclic)	Liquid
Cleaners or Cleaning Agents	1	4	Cyclohexyl isocyanate	3173-53-3	125.2	Isocyanate	Liquid
Cleaners or Cleaning Agents	2B	-	N-Laurylsarcosine sodium salt	137-16-6	293.4	Amide, Amine, Salt (organic)	Liquid
Cleaners or Cleaning Agents	1 (H)	-	Lime	1305-78-8	56.1	Salt (inorganic)	Solid
Cleaners or Cleaning Agents	1	4	Polyethylene glycol nonylphenyl ether (Surfonic HDL-1)	9016-45-9	308.5	Alcohol, Ether	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Cleaners or Cleaning Agents	1 (H)	-	Potassium hydroxide	1310-58-3	56.1	Alkali, Salt (inorganic)	Solid
Cleaners or Cleaning Agents	1	1	Propyl lactate	616-09-1	132.2	Ester, Alcohol	Solid
Cleaners or Cleaning Agents	1 (H)	-	Sodium hydrogen difluoride	1333-83-1	62.0	Salt (inorganic)	Liquid
Cleaners or Cleaning Agents	1	4	Sodium hydrogen sulfate	7681-38-1	120.1	Salt (inorganic)	Solid
Cleaners or Cleaning Agents	NI	-	Sodium lauryl sulfate	151-21-3	288.4	Acid (organic) [Carboxylic Acid], Salt (organic)	Liquid
Cleaners or Cleaning Agents	1	1	Sodium perborate tetrahydrate	10486-00-7	153.9	Boron Compound, Salt (inorganic)	Solid
Cleaners or Cleaning Agents	1	4	Di(2-ethylhexyl)sodium sulfosuccinate	577-11-7	444.6	Ester, Sulfur Compound (organic), Salt (organic)	Liquid
Cleaners or Cleaning Agents	1 (H)	-	Sulfuric acid	7664-93-9	98.1	Acid (inorganic), Sulfur Compound (inorganic)	Liquid
Cosmetics, Cosmetic Ingredients & Perfumes	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid
Cosmetics, Cosmetic Ingredients & Perfumes	1	4	p-tert-Butylphenol	98-54-4	150.2	Phenol	Solid
Cosmetics, Cosmetic Ingredients & Perfumes	1	4	Cetyltrimethylammonium bromide	57-09-0	364.4	Onium Compound, Salt (organic)	Liquid
Cosmetics, Cosmetic Ingredients & Perfumes	2B	-	Hexyl cinnamic aldehyde	101-86-0	216.3	Aldehyde	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Cosmetics, Cosmetic Ingredients & Perfumes	1	4	Lactic acid	50-21-5	90.1	Acid (organic) [carboxylic acid], Alcohol	Liquid
Cosmetics, Cosmetic Ingredients & Perfumes	1	4	n-Acetyl-methionine	1115-47-5	191.3	Amide, Amino Acid	Solid
Cosmetics, Cosmetic Ingredients & Perfumes	1	4	2-Methylbutyric acid	116-53-0	102.1	Acid (organic) [carboxylic acid]	Liquid
Cosmetics, Cosmetic Ingredients & Perfumes	1	4	Potassium laurate	10124-65-9	238.4	Acid (organic) [carboxylic acid], Salt (organic)	Liquid
Cosmetics, Cosmetic Ingredients & Perfumes	1	1	Protectol PP	80-54-6	204.3	Aldehyde	Liquid
Cosmetics, Cosmetic Ingredients & Perfumes	NI	-	Sodium lauryl sulfate	151-21-3	288.4	Acid (organic) [Carboxylic Acid], Salt (organic)	Liquid
Fertilizers	1 (H)	-	Ammonia	7664-41-7	17.0	Alkali	Liquid
Fertilizers	1 (H)	-	Lime	1305-78-8	56.1	Salt (inorganic)	Solid
Fertilizers	1 (H)	-	Potassium hydroxide	1310-58-3	56.1	Alkali, Salt (inorganic)	Solid
Fertilizers	1 (H)	-	Sulfuric acid	7664-93-9	98.1	Acid (inorganic), Sulfur Compound (inorganic)	Liquid
Flame Retardants	1	4	Antimony oxide	1309-64-4	291.5	Salt (inorganic)	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Flame Retardants	1 (H)	-	Magnesium hydroxide	12141-11-6	42.3	Salt (inorganic)	Solid
Flame Retardants	1 (H)	-	Zinc chloride	7646-85-7	136.3	Salt (inorganic)	Solid
Food Additives	2A	-	Methyl acetate	79-20-9	74.1	Ester	Liquid
Food Additives	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid
Food Additives	2B	-	Hexyl cinnamic aldehyde	101-86-0	216.3	Aldehyde	Liquid
Food Additives	1	4	n-Acetyl-methionine	1115-47-5	191.3	Amide, Amino Acid	Solid
Food Additives	1 (H)	-	Potassium hydroxide	1310-58-3	56.1	Alkali, Salt (inorganic)	Solid
Food Additives	1	1	Propyl lactate	616-09-1	132.2	Ester, Alcohol	Solid
Food Additives	1	1	Protectol PP	80-54-6	204.3	Aldehyde	Liquid
Food Additives	NI	-	Sodium lauryl sulfate	151-21-3	288.4	Acid (organic) [Carboxylic Acid], Salt (organic)	Liquid
Food Additives	1 (H)	-	Sulfuric acid	7664-93-9	98.1	Acid (inorganic), Sulfur Compound (inorganic)	Liquid
Herbicides	2A	-	Methyl acetate	79-20-9	74.1	Ester	Liquid
Herbicides	1 (H)	-	Ammonia	7664-41-7	17.0	Alkali	Liquid
Herbicides	1	4	2-Benzyl-4-chlorophenol	120-32-1	218.7	Phenol	Solid
Herbicides	1	4	Trichloroacetic acid	76-03-9	163.4	Acid (organic) [carboxylic acid]	Liquid
Herbicides	1 (H)	-	Zinc chloride	7646-85-7	136.3	Salt (inorganic)	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Industrial Chemicals & Dyes	1	4	Acetic acid	64-19-7	60.1	Acid (organic) [carboxylic acid]	Liquid
Industrial Chemicals & Dyes	2A	-	Acetone	67-64-1	58.1	Ketone	Liquid
Industrial Chemicals & Dyes	1	4	Acid blue 40	6424-85-7	473.4	Amine, Quinone, Salt (organic)	Solid
Industrial Chemicals & Dyes	1	4	Methoxyethyl acrylate	3121-61-7	130.1	Ester, Ether	Liquid
Industrial Chemicals & Dyes	1	4	Aluminum chloride	16603-84-2	98.9	Salt (inorganic)	Liquid
Industrial Chemicals & Dyes	1	4	gamma-Aminopropyltriethoxy silane	919-30-2	221.4	Amine, Amidine, Organosilicon Compound	Liquid
Industrial Chemicals & Dyes	1 (H)	-	Ammonia	7664-41-7	17.0	Alkali	Liquid
Industrial Chemicals & Dyes	2B	-	Ammonium nitrate	6484-52-2	80.0	Onium Compound, Nitrate, Salt (organic)	Solid
Industrial Chemicals & Dyes	1	4	Antimony oxide	1309-64-4	291.5	Salt (inorganic)	Solid
Industrial Chemicals & Dyes	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid
Industrial Chemicals & Dyes	2A	-	4-Carboxybenzaldehyde	619-66-9	150.1	Acid (organic) [Carboxylic Acid], Aldehyde	Liquid
Industrial Chemicals & Dyes	1 (H)	-	Chloroform	67-66-3	119.4	Hydrocarbon (acyclic)	Liquid
Industrial Chemicals & Dyes	1	4	Cyclohexyl isocyanate	3173-53-3	125.2	Isocyanate	Liquid
Industrial Chemicals & Dyes	1	1	3,4-Dichlorophenyl isocyanate	102-36-3	188.1	Isocyanate	Liquid
Industrial Chemicals & Dyes	1	4	Diethylaminopropionitrile	5351-04-2	126.2	Amine, Nitrile	Liquid
Industrial Chemicals & Dyes	1	4	1,3-Diiminobenz (f)- isoindoline	65558-69-2	195.2	Amine, Heterocyclic Compound	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Industrial Chemicals & Dyes	1	4	Bis-(3-aminopropyl) tetramethyl disiloxane	2469-55-8	248.5	Amine, Amidine, Organosilicon Compound	Liquid
Industrial Chemicals & Dyes	1	4	Granuform	30525-89-4	30.0	Aldehyde, Ether	Solid
Industrial Chemicals & Dyes	1	2	2-Hydroxyisobutyric acid ethylester	80-55-7	132.2	Alcohol, Ester	Solid
Industrial Chemicals & Dyes	1	4	2-Hydroxyisobutyric acid	594-61-6	104.1	Acid (organic) [Carboxylic Acid]	Solid
Industrial Chemicals & Dyes	1 (H)	-	Lime	1305-78-8	56.1	Salt (inorganic)	Solid
Industrial Chemicals & Dyes	1 (H)	-	Magnesium hydroxide	12141-11-6	42.3	Salt (inorganic)	Solid
Industrial Chemicals & Dyes	1	4	4-Chloro-methanilic acid	98-36-2	207.6	Amine, Sulfur Compound (organic)	Solid
Industrial Chemicals & Dyes	1	4	Methylthioglycolate	2365-48-2	106.1	Ester, Sulfur Compound (organic)	Liquid
Industrial Chemicals & Dyes	1 (H)	-	Nitric acid	7697-37-2	63.0	Acid, Salt (inorganic)	Liquid
Industrial Chemicals & Dyes	1	0 (likely 4)	tetra-N-Octylammonium bromide	14866-33-2	546.8	Onium Compound	Solid
Industrial Chemicals & Dyes	NI	-	iso-Octylthioglycolate	25103-09-7	205.3	Ester, Sulfur Compound (organic)	Liquid
Industrial Chemicals & Dyes	1	4	Polyethylene glycol nonylphenyl ether (Surfonic HDL-1)	9016-45-9	308.5	Alcohol, Ether	Liquid
Industrial Chemicals & Dyes	1 (H)	-	Potassium hydroxide	1310-58-3	56.1	Alkali, Salt (inorganic)	Solid
Industrial Chemicals & Dyes	NI	-	Potassium tetrafluoroborate	14075-53-7	125.9	Salt (inorganic)	Solid
Industrial Chemicals & Dyes	2B	-	2,6-Dichloro-5-fluoro-beta- oxo-3-pyridinepropanoate	96568-04-6	280.1	Ester, Heterocyclic Compound, Ketone	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Industrial Chemicals & Dyes	1	4	beta-Resorcylic acid	89-86-1	154.1	Acid (organic) [carboxylic acid], Phenol	Solid
Industrial Chemicals & Dyes	1 (H)	-	Silver nitrate	7761-88-8	169.9	Nitrate, Salt (inorganic)	Liquid
Industrial Chemicals & Dyes	1 (H)	-	Sodium hydrogen difluoride	1333-83-1	62.0	Salt (inorganic)	Liquid
Industrial Chemicals & Dyes	1	4	Sodium hydroxide	1310-73-2	40.0	Alkali	Liquid
Industrial Chemicals & Dyes	1	4	Sodium oxalate	62-76-0	134.0	Acid (organic) [carboxylic acid], Salt (organic)	Solid
Industrial Chemicals & Dyes	1 (H)	-	Sulfuric acid	7664-93-9	98.1	Acid (inorganic), Sulfur Compound (inorganic)	Liquid
Industrial Chemicals & Dyes	1	4	Tetraethylene glycol diacrylate	17831-71-9	302.3	Ether, Nitro Compound	Liquid
Industrial Chemicals & Dyes	1	4	Tetrahydrofuran	109-99-9	72.1	Ether, Heterocyclic Compound	Liquid
Industrial Chemicals & Dyes	1	4	N,N,N',N'-Tetramethyl hexanediamine	111-18-2	172.3	Amine	Liquid
Industrial Chemicals & Dyes	1	0 (likely 4)	2-Nitro-4-thiocyananiline	54029-45-7	195.2	Amine, Nitro Compound, Sulfur Compound (organic)	Solid
Industrial Chemicals & Dyes	NI	-	Toluene	108-88-3	92.1	Hydrocarbon (cyclic)	Liquid
Industrial Chemicals & Dyes	1	4	Trichloroacetyl chloride	76-02-8	163.4	Acyl Halide	Liquid
Industrial Chemicals & Dyes	1 (H)	-	Zinc chloride	7646-85-7	136.3	Salt (inorganic)	Solid
Laboratory Chemicals	2A	-	Methyl acetate	79-20-9	74.1	Ester	Liquid
Laboratory Chemicals	1	4	Acetic acid	64-19-7	60.1	Acid (organic) [carboxylic acid]	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Laboratory Chemicals	1	4	Methoxyethyl acrylate	3121-61-7	130.1	Ester, Ether	Liquid
Laboratory Chemicals	1	4	Aluminum chloride	16603-84-2	98.9	Salt (inorganic)	Liquid
Laboratory Chemicals	1	4	Antimony oxide	1309-64-4	291.5	Salt (inorganic)	Solid
Laboratory Chemicals	1	4	4-tert-Butylcatechol	98-29-3	166.2	Phenol	Liquid
Laboratory Chemicals	1, 2A	2	Cetylpyridinium bromide	140-72-7	384.4	Onium Compound, Heterocyclic Compound	Liquid
Laboratory Chemicals	2A	-	Deoxycholic acid sodium salt	302-95-4	414.6	Alcohol, Acid (organic) [carboxylic acid], Salt (organic), Polycyclic Compound	Liquid
Laboratory Chemicals	1	4	1,3-Diiminobenz (f)- isoindoline	65558-69-2	195.2	Amine, Heterocyclic Compound	Solid
Laboratory Chemicals	NI	-	N,n-Dimethylguanidine sulfate	598-65-2	272.3	Amidine, Salt (organic)	Solid
Laboratory Chemicals	2B	-	3,3-Dithiopropionic acid	1119-62-6	210.3	Acid (organic) [carboxylic acid], Organosilicon Compound	Solid
Laboratory Chemicals	1	4	Granuform	30525-89-4	30.0	Aldehyde, Ether	Solid
Laboratory Chemicals	1	4	alpha-Ketoglutaric acid	328-50-7	146.1	Acid (organic) [carboxylic acid]	Solid
Laboratory Chemicals	2B	-	N-Laurylsarcosine sodium salt	137-16-6	293.4	Amide, Amine, Salt (organic)	Liquid
Laboratory Chemicals	1	4	4-Chloro-methanilic acid	98-36-2	207.6	Amine, Sulfur Compound (organic)	Solid
Laboratory Chemicals	1	4	n-Acetyl-methionine	1115-47-5	191.3	Amide, Amino Acid	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Laboratory Chemicals	1 (H)	-	Nitric acid	7697-37-2	63.0	Acid (inorganic), Salt (inorganic)	Liquid
Laboratory Chemicals	1	4	n-Octylamine	111-86-4	129.2	Amine	Liquid
Laboratory Chemicals	1	0 (likely 4)	tetra-N-Octylammonium bromide	14866-33-2	546.8	Onium Compound	Solid
Laboratory Chemicals	NI	-	3-Methoxy-1,2-propanediol	623-39-2	106.1	Phenol, Ether	Liquid
Laboratory Chemicals	2B	-	6-Methyl purine	2004-03-7	134.1	Heterocyclic Compound	Liquid
Laboratory Chemicals	1 (H)	-	Silver nitrate	7761-88-8	169.9	Nitrate, Salt (inorganic)	Liquid
Laboratory Chemicals	1	4	Sodium hydrogen sulfate	7681-38-1	120.1	Salt (inorganic)	Solid
Laboratory Chemicals	NI	-	Sodium lauryl sulfate	151-21-3	288.4	Acid (organic) [Carboxylic Acid], Salt (organic)	Liquid
Laboratory Chemicals	1	4	Sodium oxalate	62-76-0	134.0	Acid (organic) [carboxylic acid], Salt (organic)	Solid
Laboratory Chemicals	1 (H)	-	Sulfuric acid	7664-93-9	98.1	Acid (inorganic), Sulfur Compound (inorganic)	Liquid
Laboratory Chemicals	1	4	N,N,N',N'-Tetramethyl hexanediamine	111-18-2	172.3	Amine	Liquid
Laboratory Chemicals	NI	-	Toluene	108-88-3	92.1	Hydrocarbon (cyclic)	Liquid
Pesticide & Pesticide Intermediates	1	4	Aluminum chloride	16603-84-2	98.9	Salt (inorganic)	Liquid ⁴
Pesticide & Pesticide Intermediates	1	4	Benzenesulfonyl chloride	98-09-9	176.6	Acyl Halide, Sulfur Compound (organic)	Liquid
Pesticide & Pesticide Intermediates	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Pesticide & Pesticide Intermediates	1	4	p-tert-Butylphenol	98-54-4	150.2	Phenol	Solid
Pesticide & Pesticide Intermediates	1	4	Captan 90-concentrate (solid)	133-06-2	300.6	Heterocyclic Compound, Sulfur Compound (organic)	Solid
Pesticide & Pesticide Intermediates	2A	-	Dibenzyl phosphate	1623-08-1	278.2	Ester, Organophosphorus Compound	Solid
Pesticide & Pesticide Intermediates	NI	-	2,4-Difluoronitrobenzene	446-35-5	159.1	Hydrocarbon (halogenated)	Solid
Pesticide & Pesticide Intermediates	2B	-	Maneb	12427-38-2	265.3	Amine, Salt (organic), Urea Compound	Solid
Pesticide & Pesticide Intermediates	1	4	1-Naphthalene acetic acid	86-87-3	186.2	Acid (organic) [carboxylic acid], Polycyclic Compound	Solid
Pesticide & Pesticide Intermediates	1	4	Phosphorodichloridic acid, ethyl ester	1498-51-7	162.9	Ester, Organophosphorus Compound	Liquid
Pesticide & Pesticide Intermediates	1	4	Polyethylene glycol nonylphenyl ether (Sulfonic HDL-1)	9016-45-9	308.5	Alcohol, Ether	Liquid
Pesticide & Pesticide Intermediates	1	4	Potassium laurate	10124-65-9	238.4	Acid (organic) [carboxylic acid], Salt (organic)	Liquid
Pesticide & Pesticide Intermediates	NI	-	Potassium tetrafluoroborate	14075-53-7	125.9	Salt (inorganic)	Solid
Pesticide & Pesticide Intermediates	1	4	Pyridine	110-86-1	79.1	Heterocyclic Compound	Liquid
Pesticide & Pesticide Intermediates	1	4	Sodium hydrogen sulfate	7681-38-1	120.1	Salt (inorganic)	Solid
Pesticide & Pesticide Intermediates	NI	-	Sodium lauryl sulfate	151-21-3	288.4	Acid (organic) [Carboxylic Acid], Salt (organic)	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Pesticide & Pesticide Intermediates	1 (H)	-	Zinc chloride	7646-85-7	136.3	Salt (inorganic)	Solid
Pharmaceuticals & Pharmaceutical Intermediates	2A	-	Acetone	67-64-1	58.1	Ketone	Liquid-
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Antimony oxide	1309-64-4	291.5	Salt (inorganic)	Solid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Benzethonium chloride	121-54-0	448.1	Amine, Onium Compound	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	1	2,2-Dimethyl butanoic acid	595-37-9	116.2	Acid (organic) [carboxylic acid]	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Chlorhexidine	55-56-1	505.4	Amidine	Solid
Pharmaceuticals & Pharmaceutical Intermediates	1 (H)	-	Chloroform	67-66-3	119.4	Hydrocarbon (acyclic)	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	2B	-	3-Chloropropionitrile	542-76-7	89.5	Nitrile	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Cyclohexyl isocyanate	3173-53-3	125.2	Isocyanate	Solid
Pharmaceuticals & Pharmaceutical Intermediates	2B	-	Cyclopentanol	96-41-3	86.1	Alcohol	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Diethylethanolamine	100-37-8	117.9	Amine, Alcohol	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Pharmaceuticals & Pharmaceutical Intermediates	NI	-	2,4-Difluoronitrobenzene	446-35-5	159.1	Hydrocarbon (halogenated)	Solid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Domiphen bromide	538-71-6	414.5	Ether, Onium Compound, Salt (organic)	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	NI	-	iso-Propyl bromide	75-26-3	123.0	Hydrocarbon (halogenated)	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	alpha-Ketoglutaric acid	328-50-7	146.1	Acid (organic) [carboxylic acid]	Solid
Pharmaceuticals & Pharmaceutical Intermediates	NI	-	Di-iso-butyl ketone	108-83-8	142.2	Ketone	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1 (H)	-	Magnesium hydroxide	12141-11-6	42.3	Salt (inorganic)	Solid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Methylpentynol	77-75-8	98.1	Alcohol	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1 (H)	-	Nitric acid	7697-37-2	63.0	Acid (inorganic), Salt (inorganic)	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	NI	-	2,2-Dimethyl-3-pentanol	3970-62-5	116.2	Alcohol	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	3	Promethazine hydrochloride	58-33-3	320.9	Amine, Amidine, Heterocyclic Compound, Sulfur Compound (organic)	Solid
Pharmaceuticals & Pharmaceutical Intermediates	2B	-	6-Methyl purine	2004-03-7	134.1	Heterocyclic Compound	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Pharmaceuticals & Pharmaceutical Intermediates	2B	-	2,6-Dichloro-5-fluoro-beta- oxo-3-pyridinepropanoate	96568-04-6	280.1	Ester, Heterocyclic Compound, Ketone	Solid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Pyridine	110-86-1	79.1	Heterocyclic Compound	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	3	Quinacrine	69-05-6	472.9	Amine, Heterocyclic Compound, Polycyclic Compound	Solid
Pharmaceuticals & Pharmaceutical Intermediates	1 (H)	-	Silver nitrate	7761-88-8	169.9	Nitrate, Salt (inorganic)	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Sodium hydroxide	1310-73-2	40.0	Alkali	Liquid
Pharmaceuticals & Pharmaceutical Intermediates	1	4	Tetrahydrofuran	109-99-9	72.1	Ether, Heterocyclic Compound	Liquid
Polish	1	1	Organofunctional Silane 45-49	82985-35-1	341.6	Amine, Organosilicon Compound	Liquid
Preservatives	2A	-	Acetone	67-64-1	58.1	Ketone	Liquid
Preservatives	1	4	Aluminum chloride	16603-84-2	98.9	Salt (inorganic)	Liquid
Preservatives	1 (H)	-	Sodium hydrogen difluoride	1333-83-1	62.0	Salt (inorganic)	Liquid
Preservatives	1 (H)	-	Zinc chloride	7646-85-7	136.3	Salt (inorganic)	Solid
Refrigerant	1 (H)	-	Ammonia	7664-41-7	17.0	Alkali	Liquid
Solvents	2A	-	Methyl acetate	79-20-9	74.1	Ester	Liquid
Solvents	1	4	Acetic acid	64-19-7	60.1	Acid (organic) [carboxylic acid]	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Solvents	2A	-	Acetone	67-64-1	58.1	Ketone	Liquid
Solvents	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid
Solvents	1	1	Butyl cellosolve	111-76-2	118.2	Alcohol, Ether	Liquid
Solvents	2B	-	Butyl dipropasol solvent	29911-27-1	176.3	Alcohol, Ether	Liquid
Solvents	2A	-	gamma-Butyrolactone	96-48-0	86.1	Heterocyclic Compound, Lactone	Liquid
Solvents	1 (H)	-	Chloroform	67-66-3	119.4	Hydrocarbon (acyclic)	Liquid
Solvents	1	2	Cyclohexanol	108-93-0	100.2	Alcohol	Liquid
Solvents	1	4	Cyclohexyl isocyanate	3173-53-3	125.2	Isocyanate	Liquid
Solvents	2A	-	Deoxycholic acid sodium salt	302-95-4	414.6	Alcohol, Acid (organic) [carboxylic acid], Salt (organic), Polycyclic Compound	Liquid
Solvents	2A	-	2-Ethyl-1-hexanol	104-76-7	130.2	Alcohol	Liquid
Solvents	2A	-	n-Hexanol	111-27-3	102.2	Alcohol	Liquid
Solvents	NI	-	Di-iso-butyl ketone	108-83-8	142.2	Ketone	Liquid
Solvents	2A	-	Methyl ethyl ketone	78-93-3	72.1	Ketone	Liquid
Solvents	2B	-	2-Methyl-1-pentanol	105-30-6	102.2	Alcohol	Liquid
Solvents	1	4	2-Methylbutyric acid	116-53-0	102.1	Acid (organic) [carboxylic acid]	Liquid
Solvents	2A	-	n-Octanol	111-87-5	130.2	Alcohol	Liquid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Solvents	2B	-	Propasol Solvent P	1569-01-3	118.2	Alcohol	Liquid
Solvents	1	4	Pyridine	110-86-1	79.1	Heterocyclic Compound	Liquid
Solvents	1	4	Tetrahydrofuran	109-99-9	72.1	Ether, Heterocyclic Compound	Liquid
Surfactant (anionic)	1	1	Lauric acid	143-07-7	200.3	Acid (organic) [Carboxylic Acid]	Solid
Surfactant (anionic)	2B	-	N-Laurylsarcosine sodium salt	137-16-6	293.4	Amide, Amine, Salt (organic)	Liquid
Surfactant (anionic)	NI	-	Sodium lauryl sulfate	151-21-3	288.4	Acid (organic) [Carboxylic Acid], Salt (organic)	Liquid
Surfactants (cationic)	1	3	Benzalkonium chloride	8001-54-5	471.5	Onium Compound	Liquid
Surfactants (cationic)	1, 2A	2	Cetylpyridinium bromide	140-72-7	384.4	Onium Compound, Heterocyclic Compound	Liquid
Surfactants (nonionic)	1	4	Polyethylene glycol nonylphenyl ether (Surfonic HDL-1)	9016-45-9	308.5	Alcohol, Ether	Liquid
Surfactants (nonionic)	1, 2A/2B, NI	4	Triton X-100	9002-93-1	250.4	Ether	Liquid
Veterinary Agents	1	4	Benzethonium chloride	121-54-0	448.1	Amine, Onium Compound	Liquid
Veterinary Agents	1	4	n-Butanol	71-36-3	74.1	Alcohol	Liquid
Veterinary Agents	1 (H)	-	Magnesium hydroxide	12141-11-6	42.3	Salt (inorganic)	Solid
Veterinary Agents	1	4	Methylpentynol	77-75-8	98.1	Alcohol	Liquid
Veterinary Agents	1 (H)	-	Potassium hydroxide	1310-58-3	56.1	Alkali, Salt (inorganic)	Solid

Product Class	GHS ¹ Category	NICEATM Cat ² . 1 Subcat ³	Substance	CASRN ⁴	MW ⁵	Chemical Class ⁶	Physical Form Tested
Veterinary Agents	1	4	Sodium hydroxide	1310-73-2	40.0	Alkali	Liquid

¹GHS=Globally Harmonized System (UN [2003]).

²Cat. = Category.

³NICEATM Cat. 1 Subcat. = Category 1 subcategories = NICEATM-assigned subcategories for GHS Category 1 substances (ocular corrosives and severe irritants) were assigned based on the following: 0 = not classifiable; 1 = positive response based on a persistent lesion involving the cornea, iris, and/or conjunctiva through to day 21 in at least one of three rabbits and not on severity; 2 = positive response based on mean for first 3 days (corneal opacity [CO] score >3 and <4 or iritis [IR] score >1.5) in at least two of three rabbits but lesions do not persist through day 21; 3 = positive response based on mean for first 3 days (CO >3 and <4 or IR >1.5) in at least two of three rabbits and a persistent (>21 days) lesion in at least one rabbit ; 4 = CO score of 4 at any time in at least one of three rabbits.

⁴CASRN = Chemical Abstract Services Registry Number.

⁵MW = molecular weight.

⁶Chemical Class=Based on the MeSH Medical Subject Heading. Available <http://www.nlm.nih.gov/mesh>; substances may be assigned into one or more chemical classes (see **Appendix B**).

⁷“-“ = not applicable.