MIXED XYLENE

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Date of issue: 5/5/2017 Revision date: Supersedes: 11/11/2015 Version: 13.6

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	:	Substance
Substance name	:	MIXED XYLENE
EC No	:	292-694-9
CAS No	:	90989-38-1
REACH registration No	:	TOTAL RAFFINAGE FRANCE (01-2119486136-34-0000) -
Synonyms	:	90989-38-1
Product group	:	-

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category	:	Professional use
Use of the substance/mixture	:	Manufacture of substances Distribution of substance Formulation & (re)packing of substances and mixtures Synthesis intermediate Coating Cleaner Use as binders and release agents Rubber production and processing Polymer production Polymer preparations and compounds Use in Agrochemicals Use in laboratories Lubricant Use as a fuel Functional Fluids Road and construction applications Use in Oil field drilling and production operations Extraction agents Explosives manufacture & use For the detailed uses of the product see annex of the safety data sheet

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

REFINING & CHEMICALS BRANCH
TOTAL PETROCHEMICALS & REFINING SA/NV
Rue de l'Industrie 52 Nijverheidsstraat - B-1040 BRUSSELS - BELGIUM
T +32 (0)2.288.91.11
rc.fer-sds@total.com - www.total.com

1.4. Emergency telephone number

Emergency number : Emergency call Carechem 24 International :
• for English speaking countries: +44 (0) 1235 239 670
• for Europe (in local languages): + 33 1 49 00 00 49
• for Africa and Middle East: + 44 (0) 1235 239 671• for China:
+ 86 10 5100 3039
• for Asia Pacific (Hong-Kong, Singapore, Taiwan, Philippines, India, Vietnam, Sri Lanka, Japan, Korea, Malaysia, Indonesia, Thailand) :
+ 65 3158 1074

Country	Organisation/Company	Address	Emergency number	Comment
	National Poisons Emergency number		08 45 46 47	
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 '+353 1 809 2166 (public, 8am - 10pm, 7/7)	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable liquids, Category 3	H226
Acute toxicity (dermal), Category 4	H312
Acute toxicity (inhalation:vapour) Category 4	H332
Skin corrosion/irritation, Category 2	H315
Serious eye damage/eye irritation, Category 2	H319
Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335
Specific target organ toxicity — Repeated exposure, Category 2	H373
Aspiration hazard, Category 1	H304
Hazardous to the aquatic environment — Chronic Hazard, Category 3	H412

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Flammable liquid and vapour. May be fatal if swallowed and enters airways. Harmful if inhaled. Harmful in contact with skin. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. The classification as a carcinogen or mutagen does not apply because the substance contains less than 0,1 % w/w benzene (EINECS No 200-753-7). Harmful to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS08 GHS07

Signal word (CLP) : Danger

Hazard statements (CLP) :
H226 - Flammable liquid and vapour
H304 - May be fatal if swallowed and enters airways
H312+H332 - Harmful in contact with skin or if inhaled
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H373 - May cause damage to organs through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements (CLP) :
P201 - Obtain special instructions before use
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P243 - Take precautionary measures against static discharge
P262 - Do not get in eyes, on skin, or on clothing
P273 - Avoid release to the environment
P281 - Use personal protective equipment as required
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P309+P311 - IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician
P403+P235 - Store in a well-ventilated place. Keep cool

2.3. Other hazards

Other hazards not contributing to the classification : In use, may form flammable/explosive vapour-air mixture. Handling this product may result in electrostatic accumulation. Use proper grounding procedures.

SECTION 3: Composition/information on ingredients

3.1. Substance

Comments : UVCB
Name : MIXED XYLENE
CAS No : 90989-38-1
EC No : 292-694-9

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
xylene	(CAS No) 1330-20-7 (EC No) 215-535-7 (EC Index No) 601-022-00-9	> 80	Flam. Liq. 3, H226 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Asp. Tox. 1, H304 Aquatic Chronic 3, H412
Ethylbenzene	(CAS No) 100-41-4 (EC No) 202-849-4	< 20	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation:vapour), H332 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 3, H412
Toluene	(CAS No) 108-88-3 (EC No) 203-625-9	< 2	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361d STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 3, H412

Full text of H-statements: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Get medical advice/attention if you feel unwell.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician immediately. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration. Place under medical observation.

First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. Get medical advice if skin irritation persists.

First-aid measures after eye contact : Immediately rinse with water for a prolonged period while holding the eyelids wide open. Consult an eye specialist.

First-aid measures after ingestion : Do not give anything to drink. Do not induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious). Take immediately victim to hospital.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : Refer to § 11 for more details on effects.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide. Dry powder. Foam.

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Explosion hazard : Heavier than air, vapours may travel long distances along ground, ignite and flash back to source. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Hazardous decomposition products in case of fire : Toxic fumes. Carbon oxides (CO, CO2). Aldehydes. Polycyclic-aromatic hydrocarbons (PAH). Carbon (C). Ketones.

5.3. Advice for firefighters

Protection during firefighting : Complete protective clothing. Do not enter fire area without proper protective equipment, including respiratory protection.

Other information : Notify fire brigade and environmental authorities. Evacuate unnecessary personnel. Use water spray or fog for cooling exposed containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : No flames, no sparks. Eliminate all sources of ignition. Do not smoke. Use special care to avoid static electric charges. Prevent any contact with hot surfaces.

6.1.1. For non-emergency personnel

Protective equipment	:	Do not attempt to take action without suitable protective equipment. Gloves. Safety glasses.
Emergency procedures for non-emergency personnel	:	Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. Breathing apparatus.
Emergency procedures for emergency responders	:	Evacuate unnecessary personnel. Eliminate all ignition sources if safe to do so.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	If spilled, may cause the floor to be slippery. Sweep up or vacuum up the product. Dike for recovery or absorb with appropriate material. Take up liquid spill into absorbent material, e.g.: sand, saw dust. On water, recover/skim from surface and pour out in disposal container.
Other information	:	Dispose of contaminated material at an authorized site. Notify authorities if product enters sewers or public waters.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Ensure good ventilation of the work station. In use, may form flammable/explosive vapour-air mixture. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge during blending and transfer operations. Explosion-free electrical equipment and lighting with earth.
Hygiene measures	:	Do not eat, drink or smoke when using this product. Keep away from food and drink. Always wash hands after handling the product. Take off contaminated clothing and wash before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed.
Storage conditions	:	Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Containers (tanks) should be grounded and provided with adequate pressure relief valve. Explosive vapour/air mixtures may be formed. Isolate, drain, wash and purge the systems or equipments before any maintenance or repair.
Storage area	:	Store away from heat. Earth the equipment. Store in a well-ventilated place.
Packaging materials	:	Stainless steel.

7.3. Specific end use(s)

Recommended to professional users.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Xylene (mixture of isomers) (1330-20-7)		
EU	IOELV TWA (mg/m³)	221 mg/m³ (pure)
EU	IOELV TWA (ppm)	50 ppm (pure)
EU	IOELV STEL (mg/m³)	442 mg/m³ (pure)
EU	IOELV STEL (ppm)	100 ppm (pure)
Ireland	OEL (8 hours ref) (mg/m³)	221 mg/m³
Ireland	OEL (8 hours ref) (ppm)	50 ppm
Ireland	OEL (15 min ref) (mg/m3)	442 mg/m³
Ireland	OEL (15 min ref) (ppm)	100 ppm
United Kingdom	WEL TWA (mg/m³)	220 mg/m³
United Kingdom	WEL TWA (ppm)	50 ppm
United Kingdom	WEL STEL (mg/m³)	441 mg/m³
United Kingdom	WEL STEL (ppm)	100 ppm
USA - ACGIH	ACGIH TWA (ppm)	100 ppm
USA - ACGIH	ACGIH STEL (ppm)	150 ppm
USA - ACGIH	Biological Exposure Indices (BEI)	1.5 g/g Kreatinin (Medium: urine - Time: end of shift - Parameter: Methylhippuric acids)

Ethylbenzene (100-41-4)		
EU	IOELV TWA (mg/m³)	442 mg/m³
EU	IOELV TWA (ppm)	100 ppm
EU	IOELV STEL (mg/m³)	884 mg/m³
EU	IOELV STEL (ppm)	200 ppm
Ireland	OEL (8 hours ref) (mg/m³)	442 mg/m³
Ireland	OEL (8 hours ref) (ppm)	100 ppm
Ireland	OEL (15 min ref) (mg/m3)	884 mg/m³
Ireland	OEL (15 min ref) (ppm)	200 ppm
United Kingdom	WEL TWA (mg/m³)	441 mg/m³
United Kingdom	WEL TWA (ppm)	100 ppm
United Kingdom	WEL STEL (mg/m³)	552 mg/m³
United Kingdom	WEL STEL (ppm)	125 ppm
USA - ACGIH	ACGIH TWA (ppm)	20 ppm
USA - ACGIH	Biological Exposure Indices (BEI)	0.7 g/g Kreatinin (Medium: urine - Time: end of shift at end of workweek - Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific, semi-quantitative) (Medium: end-exhaled air - Time: not critical - Parameter: Ethyl benzene (semi-quantitative)

Toluene (108-88-3)		
EU	IOELV TWA (mg/m³)	192 mg/m³
EU	IOELV TWA (ppm)	50 ppm
EU	IOELV STEL (mg/m³)	384 mg/m³
EU	IOELV STEL (ppm)	100 ppm
Ireland	OEL (8 hours ref) (mg/m³)	192 mg/m³
Ireland	OEL (8 hours ref) (ppm)	50 ppm
Ireland	OEL (15 min ref) (mg/m3)	384 mg/m³
Ireland	OEL (15 min ref) (ppm)	100 ppm
United Kingdom	WEL TWA (mg/m³)	191 mg/m³
United Kingdom	WEL TWA (ppm)	50 ppm
United Kingdom	WEL STEL (mg/m³)	384 mg/m³
United Kingdom	WEL STEL (ppm)	100 ppm
USA - ACGIH	ACGIH TWA (ppm)	20 ppm
USA - ACGIH	Biological Exposure Indices (BEI)	0.02 mg/l (Medium: blood - Time: prior to last shift of workweek - Parameter: Toluene) 0.03 mg/l (Medium: urine - Time: end of shift - Parameter: Toluene) 0.3 mg/g Kreatinin (Medium: urine - Time: end of shift - Parameter: o-Cresol with hydrolysis (background)

MIXED XYLENE (90989-38-1)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	289 mg/m³
Acute - local effects, inhalation	289 mg/m³
Long-term - systemic effects, dermal	180 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	77 mg/m³
Long-term - local effects, inhalation	77 mg/m³
DNEL/DMEL (General population)	
Acute - systemic effects, inhalation	174 mg/m³
Acute - local effects, inhalation	174 mg/m³
Long-term - systemic effects,oral	1.6 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	14.8 mg/m³
Long-term - systemic effects, dermal	108 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	0.327 mg/l
PNEC aqua (marine water)	0.327 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	12.46 mg/kg dwt

MIXED XYLENE (90989-38-1)	
PNEC sediment (marine water)	12.46 mg/kg dwt
PNEC (Soil)	
PNEC soil	2.31 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	6.58 mg/l

8.2. Exposure controls

Appropriate engineering controls : The substance is flammable and therefore the following conditions must be met to ensure safe use: “Risks are controlled by storage and use under conditions which avoid all ignition sources.”
. Ensure adequate ventilation. Safety shower. Eye fountain.

Personal protective equipment : Gas mask with filter type A.

Hand protection : hydrocarbons resistant gloves. In case of repeated or prolonged contact wear gloves. recommended material: fluorinated polymer. polyvinyl alcohol. Layer thickness : all thicknesses. Breakthrough time : > 480 min. EN 374-3. In the event of contact with the liquid: Nitrile rubber gloves. Layer thickness : > 0,30 mm. Breakthrough time : > 60 min. EN 374-3. Gloves may degrade in contact with this chemical.

• Carefully check the glove for cracks or damage before reusing it, dispose of gloves where the penetration time is exceeded. • The penetration time depends on temperature, glove material, thickness and construction.
Penetration time is measured against EN 374 in laboratory conditions corresponding to permanent static contact and is not necessarily representative of the risk in the workplace. Contact the gloves' supplier for further information on the selection and resistance of gloves

Eye protection : Safety glasses. Do not wear contact lenses

Skin and body protection : Wear suitable protective clothing. Safety foot-wear

Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended

Environmental exposure controls : Avoid release to the environment. Assure that emissions are compliant with all applicable air pollution control regulations.

Other information : Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Colour : Colourless.
Odour : Aromatic.
Odour threshold : No data available
pH : No data available
Relative evaporation rate (butylacetate=1) : No data available
Melting point : -95 - 13 °C
Freezing point : No data available
Boiling point : 136 - 152 °C
Flash point : > 23 °C
Auto-ignition temperature : 432 - 528 °C
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapour pressure : 6.5 - 9.5 hPa (20°C)
Relative vapour density at 20 °C : No data available
Relative density : No data available
Density : 860 - 880 kg/m³
Solubility : insoluble.
Water: 146 - 191 mg/l
Log Pow : 3.1 - 3.2

Viscosity, kinematic	:	< 0.9 mm²/s (20°C)
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	1 - 7 vol %

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Flammable liquid and vapour.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

No flames, no sparks. Eliminate all sources of ignition. High temperature. Heat.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	:	Dermal: Harmful in contact with skin. Inhalation:vapour: Harmful if inhaled.
Additional information	:	Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination and unconsciousness

Xylene (mixture of isomers) (1330-20-7)	
LD50 oral rat	4300 mg/kg
LD50 dermal rabbit	> 4200 mg/kg
LC50 inhalation rat	21.7 mg/l/4h

Ethylbenzene (100-41-4)	
LD50 oral rat	3500 mg/kg
LD50 dermal rabbit	15354 mg/kg
LC50 inhalation rat	17.2 mg/l/4h

Toluene (108-88-3)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 5000 mg/kg
LC50 inhalation rat	28.1 (28.1 - 49) mg/l/4h
LC50 inhalation rat (ppm)	> 26700 ppm/1h

Skin corrosion/irritation	:	Causes skin irritation.
Serious eye damage/irritation	:	Causes serious eye irritation.
Respiratory or skin sensitisation	:	Not classified
Additional information	:	Based on available data, the classification criteria are not met
Germ cell mutagenicity	:	Not classified Based on available data, the classification criteria are not met
Carcinogenicity	:	Not classified
Additional information	:	Based on available data, the classification criteria are not met
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	:	May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	:	May be fatal if swallowed and enters airways.
Additional information	:	In case of accidental swallowing, due to its low viscosity, the product may be aspired into the lung and induce a chemical pneumonitis developing over a few hours

MIXED XYLENE (90989-38-1)	
Viscosity, kinematic	< 0.9 mm²/s (20°C)

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Harmful to aquatic life with long lasting effects. Do not allow product to spread into the environment.

Ecology - air : Product evaporates when in contact with the air.

Ecology - water : the product spreads out on the surface of the water, a small fraction of the constituents may be dissolved.

MIXED XYLENE (90989-38-1)	
NOEC chronic algae	0.44 mg/l

Xylene (mixture of isomers) (1330-20-7)	
LC50 fish 1	13.4 mg/l (Pimephales promelas)
LC50 fish 2	2.661 - 4.093 mg/l (Oncorhynchus mykiss)
EC50 Daphnia 1	3.82 mg/l (water flea)
EC50 Daphnia 2	0.6 mg/l (Gammarus lacustris)

Ethylbenzene (100-41-4)	
LC50 fish 1	11.0 - 18.0 mg/l (Oncorhynchus mykiss)
LC50 fish 2	4.2 mg/l (Oncorhynchus mykiss)
EC50 Daphnia 1	1.8 - 2.4 mg/l (Daphnia)
EC50 other aquatic organisms 1	4.6 mg/l (Pseudokirchneriella subcapitata)
EC50 other aquatic organisms 2	> 438 mg/l (Pseudokirchneriella subcapitata)
NOEC (chronic)	1 mg/l (Daphnia)

Toluene (108-88-3)	
LC50 fish 1	15.22 - 19.05 mg/l (Pimephales promelas)
LC50 fish 2	12.6 mg/l (Pimephales promelas)
EC50 Daphnia 1	5.46 - 9.83 mg/l (Daphnia magna)
EC50 Daphnia 2	11.5 mg/l (Daphnia magna)
EC50 other aquatic organisms 1	> 433 mg/l (Pseudokirchneriella subcapitata)
EC50 other aquatic organisms 2	12.5 mg/l (Pseudokirchneriella subcapitata)

12.2. Persistence and degradability

MIXED XYLENE (90989-38-1)	
Persistence and degradability	Inherently biodegradable.

12.3. Bioaccumulative potential

MIXED XYLENE (90989-38-1)	
Log Pow	3.1 - 3.2

Xylene (mixture of isomers) (1330-20-7)	
BCF fish 1	0.6 - 15
Log Pow	2.77 - 3.15

Ethylbenzene (100-41-4)	
BCF fish 1	15
Log Pow	3.118

Toluene (108-88-3)	
Log Pow	2.65

12.4. Mobility in soil

MIXED XYLENE (90989-38-1)	
Ecology - soil	Avoid sub-soil penetration. it may pass through the soil and is likely to contaminate ground water.

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Hazardous waste. Dispose of in accordance with relevant local regulations. Use only registered transporters. Do not discharge the product into the environment. Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.

Additional information : Handle empty containers with care because residual vapours are flammable.

SECTION 14: Transport information

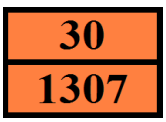
In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN Number				
1307	1307	1307	1307	1307
14.2. UN proper shipping name				
XYLENES	XYLENES	Xylenes	XYLENES	XYLENES
Transport document description				
UN 1307 XYLENES, 3, III, (D/E)	UN 1307 XYLENES, 3, III	UN 1307 Xylenes, 3, III	UN 1307 XYLENES, 3, III	UN 1307 XYLENES, 3, III
14.3. Transport hazard class(es)				
3	3	3	3	3
				
14.4. Packing Group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine Pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : F1
Limited quantities (ADR) : 5l
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P001, IBC03, LP01, R001
Mixed packing provisions (ADR) : MP19
Portable tank and bulk container instructions (ADR) : T2
Portable tank and bulk container special provisions (ADR) : TP1
Tank code (ADR) : LGBF
Vehicle for tank carriage : FL
Transport category (ADR) : 3
Special provisions for carriage - Packages (ADR) : V12
Special provisions for carriage - Operation (ADR) : S2
Hazard identification number (Kemler No.) : 30
Orange plates :



Tunnel restriction code (ADR) : D/E
EAC code : 3YE

- Transport by sea (IMDG)

Special provisions (IMDG) : 223
Limited quantities (IMDG) : 5 L
Excepted quantities (IMDG) : E1

Packing instructions (IMDG)	:	P001, LP01
IBC packing instructions (IMDG)	:	IBC03
Tank instructions (IMDG)	:	T2
Tank special provisions (IMDG)	:	TP1
EmS-No. (Fire)	:	F-E
EmS-No. (Spillage)	:	S-D
Stowage category (IMDG)	:	A
Flash point (IMDG)	:	23°C to 30°C c.c.

- Air transport (IATA)

PCA Excepted quantities (IATA)	:	E1
PCA Limited quantities (IATA)	:	Y344
PCA limited quantity max net quantity (IATA)	:	10L
PCA packing instructions (IATA)	:	355
PCA max net quantity (IATA)	:	60L
CAO packing instructions (IATA)	:	366
CAO max net quantity (IATA)	:	220L
Special provisions (IATA)	:	A3
ERG code (IATA)	:	3L

- Inland waterway transport

Classification code (ADN)	:	F1
Limited quantities (ADN)	:	5 L
Excepted quantities (ADN)	:	E1
Carriage permitted (ADN)	:	T
Equipment required (ADN)	:	PP, EX, A
Ventilation (ADN)	:	VE01
Number of blue cones/lights (ADN)	:	0

- Rail transport

Classification code (RID)	:	F1
Limited quantities (RID)	:	5L
Excepted quantities (RID)	:	E1
Packing instructions (RID)	:	P001, IBC03, LP01, R001
Mixed packing provisions (RID)	:	MP19
Portable tank and bulk container instructions (RID)	:	T2
Portable tank and bulk container special provisions (RID)	:	TP1
Tank codes for RID tanks (RID)	:	LGBF
Transport category (RID)	:	3
Special provisions for carriage – Packages (RID)	:	W12
Colis express (express parcels) (RID)	:	CE4
Hazard identification number (RID)	:	30

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

40. Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.	Toluene - Ethylbenzene - Xylene (mixture of isomers)
48. Toluene	Toluene

MIXED XYLENE is not on the REACH Candidate List

MIXED XYLENE is not on the REACH Annex XIV List

15.1.2. National regulations

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Training advice : Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.

Other information : Use good personal hygiene practices.

Full text of H- and EUH-statements:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Inhalation:vapour)	Acute toxicity (inhalation:vapour) Category 4
Aquatic Chronic 3	Hazardous to the aquatic environment — Chronic Hazard, Category 3
Asp. Tox. 1	Aspiration hazard, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 2	Flammable liquids, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
Repr. 2	Reproductive toxicity, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
H225	Highly flammable liquid and vapour
H226	Flammable liquid and vapour
H304	May be fatal if swallowed and enters airways
H312	Harmful in contact with skin
H315	Causes skin irritation
H319	Causes serious eye irritation
H332	Harmful if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H361d	Suspected of damaging the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H412	Harmful to aquatic life with long lasting effects

SDS EU (REACH Annex II)

This information applies to the PRODUCT AS SUCH and conforming to specifications of TOTAL.
In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear.
The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. However the revision of some data is in progress.
Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes.
The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive.
It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product.
It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product. (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

Annex: Exposure Scenarios for mixed-xylenes (aromatic hydrocarbons C8)

Contents

1. Exposure scenario 1: Manufacture of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

1.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	**Manufacture of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15
	Environmental Release Categories: ERC1, ERC4
Processes, tasks, activities covered	Manufacture of this substance or use as an intermediate or process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20ºC above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. With sample collection [CS56]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Process sampling [CS2].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Laboratory activities [CS36].	No specific measures identified [EI18].
Bulk transfers [CS14]. (open systems) [CS108]. With potential for aerosol generation [CS138].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Bulk transfers [CS14]. (closed systems) [CS107].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from SpERC fact sheet	
Product characteristics	The mixed-xylenes consists of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1500 ktons/year
	Regional tonnage	150 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	40
	Local marine water dilution factor	100
Conditions given in SpERC fact sheet give rise to following releases fractions		
Other Operational Conditions of use affecting environmental	Release fraction to air from process before RMMs	0.05

exposure	Release fraction to waste water from process before RMMs	0.0001
	Release fraction to soil from process before RMMs	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >90%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 10000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	During manufacturing no waste of the substance is generated. [ETW 4]	
Conditions and measures related to external recovery of waste	During manufacturing no waste of the substance is generated. [EWR 2]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent

	efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet and http://cefic.org/en/reach-for-industries-libraries.html.		
Basis for scaling	Environment	
	Risk-driving Compartment – Sewage Treatment Plant	
	Msafe: 1.56E+07 kg/day after RMM	
Site Use	150 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 90 % removal efficiency air emission	
Dilution factors	Freshwater	40
	Marine water	100
Initial release percent at site to water (before RMM)		0.01
Typical release to water after RMM		5.85E-03 mg/l

2. Exposure scenario 2: Distributionof mixed-xylenes (aromatic hydrocarbons C8) - Industrial

2.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Distribution of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Industrial (SU3, SU8, SU9)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15
	Environmental Release Categories: ERC1 -7
Processes, tasks, activities covered	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its distribution and associated laboratory activities
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. With sample collection [CS56]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Process sampling [CS2].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Laboratory activities [CS36].	No specific measures identified [EI18].
Bulk transfers [CS14]. (closed systems) [CS107].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Bulk transfers [CS14]. (open systems) [CS108].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Drum and small package filling [CS6].	Transfer via enclosed lines [E52].
Equipment cleaning and maintenance [CS39].	Drain down and flush system prior to equipment break-in or maintenance [E55].
Storage [CS67]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 1.1b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1000 ktons/year
	Regional tonnage	100 ktons/year
	Fraction of main local source	0.002
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 1. 1b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting	Release fraction to air from process before RMMs	0.001

environmental exposure	Release fraction to waste water from process before RMMs	0.00001
	Release fraction to soil from process before RMMs	0.00001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >90%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[EWR 1]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent

	efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater Sediment	
	Msafe: 2.81E+05 kg/day after RMM	
Site Use	0.2 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 90 % reùoval efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.001
Typical release to water after RMM		6E-04 mg/l

3. Exposure scenario 3: Use as an intermediate of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

Human health assessment is not required for this use, as use an intermediate is included in the manufacture of mixed-xylenes (aromatic hydrocarbons C8), see section 1.

3.1. Exposure scenario

Section 2.2	Control of environmental exposure	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 6.1a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable.	
Amounts Used	EU tonnage	150 ktos/year
	Regional tonnage	15 ktons/year
	Fraction of main local source	0.25
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 6.1a.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.01
	Release fraction to waste water from process before RMMs	0.003
	Release fraction to soil from process before RMMs	0.001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	

Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].
	Sludge should be incinerated, contained or reclaimed [OMS3].
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	This substance is consumed during use and no waste of the substance is generated.. [ETW 5]
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated. [EWR 3]
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	Not applicable
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Not applicable
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 23148 kg/day after RMM	
Site Use	3.75 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 80 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.3
Typical release to water after RMM		7.94E-02 mg/l

4. Exposure scenario 4: Formulation and (re)packaging of substances and mixtures of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

4.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Formulation & (re)packaging of substances and mixtures of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Industrial (SU3, SU10)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15
	Environmental Release Categories: ERC2
Processes, tasks, activities covered	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing, maintenance and associated laboratory activities
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. With sample collection [CS56]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56]. With potential for aerosol generation [CS138].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Batch processes at elevated temperatures [CS136].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Process sampling [CS2].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Laboratory activities [CS36].	No specific measures identified [EI18].
Bulk transfers [CS14].	Ensure material transfers are under containment or extract ventilation [E66].
Mixing operations (open systems) [CS30]. With potential for aerosol generation [CS138].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Manual [CS34]. Transfer from/pouring from containers [CS22].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Drum/batch transfers [CS8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Production or preparation or articles by tabletting, compression, extrusion or pelletisation [CS100].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Drum and small package filling [CS6].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Equipment cleaning and maintenance [CS39].	Drain down and flush system prior to equipment break-in or maintenance [E55].
Storage [CS67]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 2.2.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	150 ktons/year
	Regional tonnage	15 ktons/year
	Fraction of main local source	0.25
Frequency and duration of use	Emission days per year	300

Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 2.2.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.025
	Release fraction to waste water from process before RMMs	0.002
	Release fraction to soil from process before RMMs	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of 0%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
	Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements): [OOC11]	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[EWR 1]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted

	DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 34626 kg/day after RMM	
Site Use	3.75 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.2

Typical release to water after RMM	5.31E-02 mg/l

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5. Exposure scenario 5: Use of mixed-xylenes (aromatic hydrocarbons C8) in coatings - Industrial

5.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	**Use in coatings of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15, PROC 24
	Environmental Release Categories: ERC 4
Processes, tasks, activities covered	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and high (mechanical) energy work-up of substances bound in materials and/or articles and equipment cleaning, maintenance and associated laboratory activities.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is > 10 kPa [OC5].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. With sample collection [CS56]. Use in contained systems [CS38].	Handle substance within a closed system [E47].
Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing [CS94].	Handle substance within a closed system [E47].
Mixing operations (closed systems) [CS29]. General exposures (closed systems) [CS15].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].

Film formation - air drying [CS95].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Preparation of material for application [CS96]. Mixing operations (open systems) [CS30].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Spraying (automatic/robotic) [CS97].	Carry out in a vented booth provided with laminar airflow [E59].
Manual [CS34]. Spraying [CS10].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Material transfers [CS3]. Non-dedicated facility [CS82].	Ensure material transfers are under containment or extract ventilation [E66].
Material transfers [CS3]. Dedicated facility [CS81].	Ensure material transfers are under containment or extract ventilation [E66].
Roller, spreader, flow application [CS98].	Provide extract ventilation to points where emissions occur [E54].
Dipping, immersion and pouring [CS4].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Laboratory activities [CS36].	No specific measures identified [EI18].
Material transfers [CS3]. Drum/batch transfers [CS8]. Transfer from/pouring from containers [CS22].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Production or preparation or articles by tabletting, compression, extrusion or pelletisation [CS100].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
Hot rolling, grinding, mechanical cutting, drilling or sanding.	No specific measures identified [EI18]

Section 2.2	**Control of environmental exposure**
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.3a.v1
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable

Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	0.5
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 4.3.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.98
	Release fraction to waste water from process before RMMs	0.007
	Release fraction to soil from process before RMMs	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >90%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Soil emission controls are not applicable as there is no direct release to soil. [TCR 4]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	

Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment
	Risk-driving Compartment – Soil

	Msafe: 9874 kg/day after RMM	
Site Use	2.5 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 90 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.7
Typical release to water after RMM		1.23E-01 mg/l

6. Exposure scenario 6: Use of mixed-xylenes (aromatic hydrocarbons C8) in coatings - Professional

6.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Use in coatings of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19, PROC 24
	Environmental Release Categories: ERC 8A, ERC 8D, ERC 8C, ERC 8F
Processes, tasks, activities covered	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and high (mechanical) energy work-up of substances bound in materials and/or articles and equipment cleaning, maintenance and associated laboratory activities.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15].	Handle substance within a closed system [E47].
Filling / preparation of equipment from drums or containers. [CS45].	Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation [E66].
General exposures (closed systems) [CS15]. Use in contained systems [CS38].	Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation [E66].
Preparation of material for application [CS96].	Handle substance within a closed system [E47]. Provide a

	good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Film formation - air drying [CS95]. Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27]. Wear suitable gloves tested to EN374 [PPE15].
Film formation - air drying [CS95]. Indoor [OC8].	Provide extract ventilation to points where emissions occur [E54]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Preparation of material for application [CS96]. Indoor [OC8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Preparation of material for application [CS96]. Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Material transfers [CS3]. Drum/batch transfers [CS8].	Transfer via enclosed lines [E52].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Material transfers [CS3]. Drum/batch transfers [CS8].	Transfer via enclosed lines [E52]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Roller, spreader, flow application [CS98]. Indoor [OC8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Roller, spreader, flow application [CS98]. Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Manual [CS34]. Spraying [CS10]. Indoor [OC8].	Carry out in a vented booth provided with laminar airflow [E59].
Manual [CS34]. Spraying [CS10]. Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 4 hours [OC28]. Wear suitable gloves tested to EN374 [PPE15]. Wear a full face respirator conforming to EN140 with Type A filter or better. [PPE24].
Dipping, immersion and pouring [CS4]. Indoor [OC8].	Provide extract ventilation to points where emissions occur [E54]. Avoid carrying out activities involving exposure for more than 4 hours [OC28].
Dipping, immersion and pouring [CS4]. Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Laboratory activities [CS36].	Handle in a fume cupboard or under extract ventilation [E83].
Hand application - fingerpaints, pastels, adhesives [CS72]. Indoor [OC8].	Limit the substance content in the product to 5% [OC17]. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Wear suitable gloves tested to EN374 [PPE15].
Hand application - fingerpaints, pastels, adhesives [CS72]. Outdoor [OC9].	Limit the substance content in the product to 5% [OC17]. Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 4 hours [OC28]. Wear suitable gloves tested to EN374

	[PPE15].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].Avoid carrying out activities involving exposure for more than 4 hours [OC28].
Storage [CS67]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47]. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Hot rolling, grinding, mechanical cutting, drilling or sanding.	No specific measures identified [EI18]

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.3b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	0.002
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 8.3b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.98
	Release fraction to waste water from process before RMMs	0.01
	Release fraction to soil from process before RMMs	0.01

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of 0%. [TCR 7]
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS 4]
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]
Other environmental control measures additional to above	Not applicable

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 5969 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		1
Typical release to water after RMM		1.16E-03 mg/l

7. Exposure scenario 7: Use of mixed-xylenes (aromatic hydrocarbons C8) in coatings – Consumer

7.1. Exposure scenario

Section 1		**Exposure Scenario Title**
Title		**Uses in Coatings**
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC1, PC4, PC8 (excipient only), PC9, PC15, PC18, PC23, PC24, PC31, PC34
Processes, tasks, activities covered		Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.
Environmental Release Category		ERC 8a, ERC 8d, ERC 8c, ERC 8f
Specific Environmental Release Category		ESVOC SpERC 8.3c.v1
Section 2		**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.		Consumer exposure was estimated using ECETOC TRAv2.
Section 2.1		**Control of consumer exposure**
Product characteristics		
Physical form of product		liquid
Vapour pressure		950 Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 100% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 6900g [ConsOC2]; covers skin contact area up to 857.5cm^2 [ConsOC5]
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 1 times per day [ConsOC4]; covers exposure up to 6 hours per event [ConsOC14]
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m^3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Section 2.1.1		**Product categories**
PC1:Adhesives, sealants--Glues, hobby use	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 9g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC1:Adhesives, sealants--Glues DIY-use (carpet glue, tile glue, wood parquet glue)	OC	Unless otherwise stated, covers concentrations up to 0.2% [ConsOC1]; covers use up to 1 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.70 cm2 [ConsOC5]; for each use event, covers use amounts up to 6390g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 6.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Glue from spray	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 85.05g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Sealants	OC	Unless otherwise stated, covers concentrations up to 25% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 75g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Washing car window	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 0.5g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.02hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Pouring into radiator	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2000g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs

		stated
PC4_n:Anti-freeze and de-icing products--Lock de-icer	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 214.40 cm2 [ConsOC5]; for each use event, covers use amounts up to 4g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Laundry and dish washing products	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	OC	Unless otherwise stated, covers concentrations up to 15% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 0.5% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs

		stated
PC9a:Coatings and paints, fillers putties, thinners--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 2% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 21% [ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 215g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 3% [ConsOC1]; covers use up to 3 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Fillers and putty	OC	Unless otherwise stated, covers concentrations up to 2% [ConsOC1]; covers use up to 12 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 85g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Plasters and floor equalizers	OC	Unless otherwise stated, covers concentrations up to 0.3% [ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 6900g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC9b:Fillers, putties, plasters, modeling clay--Modelling clay	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 254.40 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9c:Finger paints --Finger paints	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 254.40 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1.35g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.03hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 0.5% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 2.2% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 21% [ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 215g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC15_n: Non-metal surface treatment products--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 3.4% [ConsOC1]; covers use up to 3 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC18_n: Ink and toners--Inks and toners.	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 71.40 cm2 [ConsOC5]; for each use event, covers use amounts up to 40g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC23_n: Leather tanning, dye, finishing, impregnation and care products--Polishes, wax / cream (floor, furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 25% [ConsOC1]; covers use up to 29 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 56g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.23hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC23_n: Leather tanning, dye, finishing, impregnation and care products--Polishes, spray (furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 33% [ConsOC1]; covers use up to 8 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 56g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Liquids	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2200g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC24: Lubricants, greases, and release products--Pastes	OC	Unless otherwise stated, covers concentrations up to 15% [ConsOC1]; covers use up to 10 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 34g [ConsOC2]; covers use in room size of 20m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Sprays	OC	Unless otherwise stated, covers concentrations up to 45% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 73g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC31:Polishes and wax blends--Polishes, wax / cream (floor, furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 29 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 142g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.23hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC31:Polishes and wax blends--Polishes, spray (furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 48% [ConsOC1]; covers use up to 8 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC34_n: Textile dyes, finishing and impregnating products--	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 115g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

Section 2.2	Control of environmental exposure	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.3c.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	0.002
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 8.3c.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from wide dispersive use (regional only) [OOC7]	0.985
	Release fraction to wastewater from wide dispersive use [OOC8]	0.01
	Release fraction to soil from wide dispersive use (regional only) [OOC9]	0.005
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS4]	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	

Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]
Other environmental control measures additional to above	None

Section 3		**Exposure Estimation**
3.1. Health		
		When the recommended risk management measures (RMMs) when available and operational conditions (OCs) are observed, exposure of consumers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment		
		When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
		Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment		
		Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 5969 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		1
Typical release to water after RMM		1.16E-03 mg/l

8. Exposure scenario 8: Use of mixed-xylenes (aromatic hydrocarbons C8) in cleaning - Industrial

8.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Use in cleaning agents of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Industrial (SU3, SU10)
	Process Categories: PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13
	Environmental Release Categories: ERC4
Processes, tasks, activities covered	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
	0
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14].	Ensure material transfers are under containment or extract ventilation [E66].
Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38].	Handle substance within a closed system [E47].
Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38]. Drum/batch transfers [CS8]. Use in contained systems [CS38].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Application of cleaning products in closed systems [CS101].	Handle substance within a closed system [E47].

Filling / preparation of equipment from drums or containers. [CS45]. Dedicated facility [CS81].	Provide extract ventilation to points where emissions occur [E54].
Use in contained batch processes [CS37]. Treatment by heating [OC129].	Provide extract ventilation to points where emissions occur [E54].
Degreasing small objects in cleaning station [CS41].	Provide extract ventilation to points where emissions occur [E54].
Cleaning with low-pressure washers [CS42].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Cleaning with high pressure washers [CS44].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Avoid carrying out activities involving exposure for more than 1 hour [OC27]. Wear suitable gloves tested to EN374 [PPE15].
Manual [CS34]. Surfaces [CS48]. Cleaning [CS47]. No spraying [CS60].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.4a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 4.4a.v1) give rise to following releases fractions		

Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	1
	Release fraction to waste water from process before RMMs	0.00003
	Release fraction to soil from process before RMMs	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >70%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Soil emission controls are not applicable as there is no direct release to soil. [TCR 4]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 529101 kg/day after RMM	
Site Use	5 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 70 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.003
Typical release to water after RMM		1.64E-03 mg/l

.

9. Exposure scenario 9: Use of mixed-xylenes (aromatic hydrocarbons C8) in cleaning - Professional

9.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Use in cleaning agents of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13
	Environmental Release Categories: ERC 8A, ERC 8D, ERC 8C, ERC 8F
Processes, tasks, activities covered	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Filling / preparation of equipment from drums or containers [CS45]. Dedicated facility [CS81].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38]. Drum/batch transfers [CS8].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products) [CS76].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].

Filling / preparation of equipment from drums or containers. [CS45]. Outdoor [OC9].	Use drum pumps or carefully pour from container [E64]. Ensure operation is undertaken outdoors [E69].
Manual [CS34]. Cleaning [CS47]. Surfaces [CS48]. Dipping, immersion and pouring [CS4].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Cleaning with low-pressure washers [CS42]. Rolling, Brushing [CS51]. No spraying [CS60].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Cleaning with high pressure washers [CS44]. Spraying [CS10]. Indoor [OC8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Cleaning with high pressure washers [CS44]. Spraying [CS10]. Outdoor [OC9].	Limit the substance content in the product to 5% [OC17]. Ensure operation is undertaken outdoors [E69]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Manual [CS34]. Surfaces [CS48]. Cleaning [CS47]. Spraying [CS10].	Provide extract ventilation to points where emissions occur [E54]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Ad hoc manual application via trigger sprays, dipping, etc. [CS27]. Rolling, Brushing [CS51].	Provide extract ventilation to points where emissions occur [E54]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Ad hoc manual application via trigger sprays, dipping, etc. [CS27]. Rolling, Brushing [CS51].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Application of cleaning products in closed systems [CS101] Outdoor [OC9].	Handle substance within a closed system [E47]. Ensure operation is undertaken outdoors [E69].
Cleaning of medical devices [CS74].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65]. Avoid carrying out activities involving exposure for more than 4 hours [OC28].
Storage [CS67]. With occasional controlled exposure [CS137].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Section 2.2	**Control of environmental exposure**
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.4b.v1
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable

Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktonn/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 8.4b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.02
	Release fraction to waste water from process before RMMs	0.000001
	Release fraction to soil from process before RMMs	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of 0%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Soil emission controls are not applicable as there is no direct release to soil. [TCR 4]	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS 4]	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant floisw 20000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	Not applicable	

Section 3	Exposure Estimation
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment
	Risk-driving Compartment – Freshwater sediment
	Msafe: 11809 kg/day after RMM
Site Use	0.01 ktons/year
On-site emission factors	95.8% efficiency water treatment in STP, 0 % removal efficiency air emission

Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.0001
Typical release to water after RMM		5.850E-04 mg/l

.

10. Exposure scenario 10: Use of mixed-xylenes (aromatic hydrocarbons C8) in cleaning - Consumer

10.1. Exposure scenario

Section 1		**Exposure Scenario Title**
Title		**Use in Cleaning Agents**
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC3, PC4, PC8, PC9, PC24, PC35, PC38. Note PC8 included based upon indication this will be changed from Coatings to Cleanings in future.
Processes, tasks, activities covered		Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.
Environmental Release Category		ERC 8a, ERC 8d, ERC 8c, ERC 8f
Specific Environmental Release Category		ESVOC SpERC 8.4c.v1
Section 2		**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.		Consumer exposure was estimated using ECETOC TRAv2.
Section 2.1		**Control of consumer exposure**
Product characteristics		
Physical form of product		liquid
Vapour pressure		950 Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 50% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 6900g [ConsOC2]; covers skin contact area up to 857.5cm^2 [ConsOC5]
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 4 times per day [ConsOC4]; covers exposure up to 8 hours per event [ConsOC14]
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m^3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Section 2.1.1		**Product categories**
PC3:Air care products--Air care, instant action (aerosol sprays)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 4 times/day of use[ConsOC4]; for each use event, covers use amounts up to 0.1g [ConsOC2]; covers use in

		room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC3:Air care products--Air care, continuous action (solid and liquid)	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.70 cm2 [ConsOC5]; for each use event, covers use amounts up to 0.48g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 8.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Washing car window	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 0.5g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.02hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Pouring into radiator	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2000g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Lock de-icer	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 214.40 cm2 [ConsOC5]; for each use event, covers use amounts up to 4g

		[ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Laundry and dish washing products	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	OC	Unless otherwise stated, covers concentrations up to 17% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 0.2% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size

		of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 2.3% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 5.5% [ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 215g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 3% [ConsOC1]; covers use up to 3 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Fillers and putty	OC	Unless otherwise stated, covers concentrations up to 2% [ConsOC1]; covers use up to 12 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 85g [ConsOC2]; covers use in room size

		of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Plasters and floor equalizers	OC	Unless otherwise stated, covers concentrations up to 0.2% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 6900g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Modelling clay	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 254.40 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1g [ConsOC13]; covers use in room size of 20m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC9c:Finger paints --Finger paints	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 254.40 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1.35g [ConsOC13]; covers use in room size of 20m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Liquids	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2200g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];

	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Pastes	OC	Unless otherwise stated, covers concentrations up to 20% [ConsOC1]; covers use up to 10 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 34g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Sprays	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 73g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC35:Washing and cleaning products (including solvent based products)--Laundry and dish washing products	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC35:Washing and cleaning products (including solvent based products)--Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC35:Washing and cleaning products (including solvent based products)--Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	OC	Unless otherwise stated, covers concentrations up to 17% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC38_n: Welding and soldering products, flux products--NOTE, n_assessment not in TRA	OC	Unless otherwise stated, covers concentrations up to 20% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 12g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.4c.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100

Conditions given in SPERC fact sheet (ESVOC SpERC 8.4c.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from wide dispersive use (regional only) [OOC7]	0.95
	Release fraction to wastewater from wide dispersive use [OOC8]	0.025
	Release fraction to soil from wide dispersive use (regional only) [OOC9]	0.025
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]	
Other environmental control measures additional to above	Not applicable	

Section 3		**Exposure Estimation**
3.1. Health		
Health sub-headings		When the recommended risk management measures (RMMs) when available and operational conditions (OCs) are observed, exposure of consumers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment		
Environment sub-headings		When the recommended risk management measures (RMMs)

		and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
Health sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment		
Environment sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 2762 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		2.5
Typical release to water after RMM		2.02E-03 mg/l

11. Exposure scenario 11: Use of mixed-xylenes (aromatic hydrocarbons C8) in lubricants - Industrial

11.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Use in Lubricants of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Industrial (SU3, SU10)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17
	Environmental Release Categories: ERC 7, ERC 4
Processes, tasks, activities covered	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. Batch process [CS55].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
General exposures (open systems) [CS16]. With occasional controlled exposure [CS137].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
General exposures (open systems) [CS16]. Batch process [CS55].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Bulk transfers [CS14]. Dedicated facility [CS81].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Filling / preparation of equipment from drums or containers [CS45]. Non-dedicated facility [CS82].	Use drum pumps or carefully pour from container [E64].
Filling / preparation of equipment from drums or containers [CS45]. Dedicated facility [CS81].	Use drum pumps or carefully pour from container [E64]. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Initial factory fill of equipment [CS75].	Ensure material transfers are under containment or extract ventilation [E66].
Operation and lubrication of high energy open equipment [CS17]. Indoor [OC8].	Restrict area of openings to equipment [E68]. Provide extract ventilation to points where emissions occur [E54].
Operation and lubrication of high energy open equipment [CS17].	Restrict area of openings to equipment [E68]. Provide extract ventilation to points where emissions occur [E54].
Manual roller application or brushing [CS13].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Treatment by dipping and pouring [CS35].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Spraying [CS10].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Spraying [CS10].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Maintenance (of larger plant items) and machine set up [CS77].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Maintenance (of larger plant items) and machine set up [CS77].	Ensure material transfers are under containment or extract ventilation [E66].
Maintenance of small items [CS18].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Remanufacture of reject articles [CS19].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Storage [CS67].	Handle substance within a closed system [E47].

Section 2.2	**Control of environmental exposure**
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.6a.v1
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily

	biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 4.6a.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.01
	Release fraction to waste water from process before RMMs	0.0003
	Release fraction to soil from process before RMMs	0.001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >70%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	None	

Section 3	Exposure Estimation
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency..
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment
	Risk-driving Compartment – Soil
	Msafe: 230521 kg/day after RMM
Site Use	5 ktons/year
On-site emission factors	95.8 % efficiency water treatment in STP, 70 % removal efficiency air emission

Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.03
Typical release to water after RMM		1.11E-02 mg/l

12. Exposure scenario 12: Use of mixed-xylenes (aromatic hydrocarbons C8) in lubricants - Professional

12.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Use in Lubricants of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, PROC18, PROC20
	Environmental Release Categories: ERC 8a, ERC 8d, ERC 9a, ERC 9b
Processes, tasks, activities covered	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20ºC above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15].	Handle substance within a closed system [E47].
General exposures (closed systems) [CS15]. Batch process [CS55].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
General exposures (closed systems) [CS15].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
General exposures (open systems) [CS16].	Ensure material transfers are under containment or extract ventilation [E66].
Bulk transfers [CS14]. Dedicated facility [CS81].	Transfer via enclosed lines [E52].
Filling / preparation of equipment from drums	Transfer via enclosed lines [E52].

or containers. [CS45]. Dedicated facility [CS81].	
Filling / preparation of equipment from drums or containers. [CS45]. Non-dedicated facility [CS82].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Use drum pumps or Carefully pour from containers [E64].
Operation and lubrication of high energy open equipment [CS17].	Restrict area of openings to equipment [E68]. Provide extract ventilation to points where emissions occur [E54].
Operation and lubrication of high energy open equipment [CS17].	Restrict area of openings to equipment [E68].Provide extract ventilation to points where emissions occur [E54]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Operation and lubrication of high energy open equipment [CS17]. Outdoors [OC9].	Limit the substance content in the product to 5% [OC17]. Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 4 hours [OC 28].
Operation and lubrication of high energy open equipment [CS17].	Limit the substance content in the product to 5% [OC17]. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Maintenance (of larger plant items) and machine set up [CS77]. Dedicated facility [CS81].	Ensure material transfers are under containment or extract ventilation [E66].
Maintenance (of larger plant items) and machine set up [CS77]. Elevated Temperature.	Provide extract ventilation to emission points when contact with warm (>50 deg C) lubricant is likely [E67]. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Maintenance of small items [CS18].	Drain down and flush system prior to equipment break-in or maintenance [E55]. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Avoid carrying out activities involving exposure for more than 4 hours [OC 28].
Engine lubricant service [CS78].	Transfer via enclosed lines [E52].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].Wear suitable gloves tested to EN374 [PPE15].
Batch process [CS55]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 9.6b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year

	Regional tonnage	5 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 9.6b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.01
	Release fraction to waste water from process before RMMs	0.01
	Release fraction to soil from process before RMMs	0.01
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >0%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS 4]	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	Not applicable	

Section 3	**Exposure Estimation**

3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 5969 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100

Initial release percent at site to water (before RMM)	1
Typical release to water after RMM	1.16E-03 mg/l

13. Exposure scenario 13: Use of mixed-xylenes (aromatic hydrocarbons C8) in lubricants - Consumer

13.1. Exposure scenario

Section 1		**Exposure Scenario Title**
Title		**Lubricants**
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC1, PC24, PC31
Processes, tasks, activities covered		Covers the consumer use of formulated lubricants in closed and open systems including transfer operations, application, operation of engines and similar articles, equipment maintenance and disposal of waste oil.
Environmental Release Category		ERC 8a, ERC 8d, ERC 9a, ERC 9b
Specific Environmental Release Category		ESVOC SpERC 9.6d.v1
Section 2		**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.		Consumer exposure was estimated using ECETOC TRAv2.
Section 2.1		**Control of consumer exposure**
Product characteristics		
Physical form of product		liquid
Vapour pressure		950 Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 50% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 3195g [ConsOC2]; covers skin contact area up to 468cm2 [ConsOC5]
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 1 times per day [ConsOC4]; covers exposure up to 6 hours per event [ConsOC14]
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m^3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Section 2.1.1		**Product categories**
PC1:Adhesives, sealants--Glues, hobby use	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 9g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Glues DIY-use (carpet glue, tile glue, wood parquet glue)	OC	Unless otherwise stated, covers concentrations up to 0.1% [ConsOC1]; covers use up to 1 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 110.00 cm2 [ConsOC5]; for each

		use event, covers use amounts up to 3195g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 6.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Glue from spray	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 85.05g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Sealants	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 75g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Liquids	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2200g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Pastes	OC	Unless otherwise stated, covers concentrations up to 20% [ConsOC1]; covers use up to 10 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 34g [ConsOC2]; covers use in room size of 20m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Sprays	OC	Unless otherwise stated, covers concentrations up to 8% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.75 cm2 [ConsOC5]; for each use event, covers use amounts up to 73g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC31:Polishes and wax blends--Polishes, wax / cream (floor, furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 29 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 142g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each

		use event, covers exposure up to 1.23hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC31:Polishes and wax blends--Polishes, spray (furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 18% [ConsOC1]; covers use up to 8 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 9.6d.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 9.6d.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from wide dispersive use (regional only) [OOC7]	0.01
	Release fraction to wastewater from wide dispersive use [OOC8]	0.01

	Release fraction to soil from wide dispersive use (regional only) [OOC9]	0.01
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS4]	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]	
Other environmental control measures additional to above	None	

Section 3		**Exposure Estimation**
3.1. Health		
		When the recommended risk management measures (RMMs) when available and operational conditions (OCs) are observed, exposure of consumers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment		
		When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4		**Guidance to check compliance with the Exposure Scenario**
Guidance how the DU can evaluate whether he operates within the conditions set in the exposure scenario - scaling tools. Standard phrases		
4.1. Health		
		Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment		

Environment sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 5969 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		1
Typical release to water after RMM		1.16E-03 mg/l

14. Exposure scenario 14: Use of mixed-xylenes (aromatic hydrocarbons C8) in binders - Industrial

14.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	**Use in binders and release agents of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Industrial (SU3, SU8, SU9)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC6, PROC7, PROC8b, PROC10, PROC13, PROC14
Environmental Release Categories:	ERC4
Processes, tasks, activities covered	Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mould forming and casting, and handling of waste.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20ºC above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Material transfers [CS3].	Handle substance within a closed system [E47].
Material transfers [CS3]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
Material transfers [CS3]. Batch process [CS55]. (closed systems) [CS107].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Drum/batch transfers [CS8].	Transfer via enclosed lines [E52].
Mixing operations (closed systems) [CS29].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Mixing operations (open systems) [CS30].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Mold forming [CS31].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Avoid carrying out activities involving exposure operation for more than 1 hour [OC27].
Casting operations [CS32].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Spraying [CS10]. Machine [CS33].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Manual roller application or brushing [CS13].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Spraying [CS10]. Manual [CS34].	Carry out in a vented booth or extracted enclosure [E57]. Avoid carrying out activities involving exposure operation for more than 4 hours [OC2].
Storage [CS67].	Store substance within a closed system [E84].
Storage [CS67]. With occasional controlled exposure [CS137].	Store substance within a closed system [E84].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.10a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 4.10a.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting	Release fraction to air from	1

environmental exposure	process before RMMs	
	Release fraction to waste water from process before RMMs	0.00003
	Release fraction to soil from process before RMMs	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Soil emission controls are not applicable as there is no direct release to soil. [TCR 4]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 712251 kg/day after RMM	
Site Use	5 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 80 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.003
Typical release to water after RMM		1.64E-03 mg/l

15. Exposure scenario 15: Use of mixed-xylenes (aromatic hydrocarbons C8) in binders - Professional

15.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	**Use as mould release and binder of mixed-xylenes (aromatic hydrocarbons C8)**
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC6, PROC 8a, PROC8b, PROC10, PROC11, PROC14
Environmental Release Categories:	ERC 8a, ERC 8d, ERC 8c, ERC 8f
Processes, tasks, activities covered	Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20ºC above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Material transfers [CS3]. (closed systems) [CS107].	Handle substance within a closed system [E47].
Material transfers [CS3]. (closed systems) [CS107]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Material transfers [CS3]. (closed systems) [CS107]. Batch process [CS55].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Drum/batch transfers [CS8].	Use drum pumps or carefully pour from container [E64].
Mixing operations (closed systems) [CS29].	Formulate in enclosed or ventilated mixing vessels [E46]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Mixing operations (open systems) [CS30].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].

Mold forming [CS31].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Casting operations [CS32]. (open systems) [CS108].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Spraying [CS10]. Manual [CS34].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Minimise exposure by extracted full enclosure for the operation or equipment [E61].
Manual roller application or brushing [CS13].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Provide extract ventilation to points where emissions occur [E54]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Spraying [CS10]. Manual [CS34].	Carry out in a vented booth or extracted enclosure [E57]. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]. Wear suitable gloves tested to EN374 [PPE15]. Wear a respirator conforming to EN140 with Type A filter or better [PPE22].
Storage [CS67].	Store substance within a closed system [E84].
Storage [CS67]. With occasional controlled exposure [CS137].	Store substance within a closed system [E84]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.10b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 8.10b.v1) give rise to following releases fractions		

Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.95
	Release fraction to waste water from process before RMMs	0.025
	Release fraction to soil from process before RMMs	0.025
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >0%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS 4]	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	Not applicable	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.

4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 2713 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		2.5
Typical release to water after RMM		2.02E-03 mg/l

16. Exposure scenario 16: Use of mixed-xylenes (aromatic hydrocarbons C8) in agrochemicals - Professional

16.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in agrochemicals of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Professional (SU22)
Process Categories:	PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC11, PROC13
Environmental Release Categories:	ERC8A, ERC 8D
Processes, tasks, activities covered	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20ºC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Transfer from/pouring from containers [CS22].	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) [E40].
Mixing in containers [CS23].	Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Spraying/fogging by manual application [CS24].	Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 4 hours [OC28]. Wear suitable gloves tested to EN374 [PPE15]. Wear a full face respirator conforming to EN140 with Type A filter or better [PPE24].

Spraying/fogging by machine application [CS25].	Limit the substance content in the product to 25% [OC18].Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 [E70]. Wear suitable gloves tested to EN374 [PPE15].
Ad hoc manual application via trigger sprays, dipping, etc. [CS27].	Limit the substance content in the product to 25% [OC18]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27]. Wear suitable gloves tested to EN374 [PPE15].
Clean down and maintenance [CS26]. Non-dedicated facility [CS82].	Avoid carrying out activities involving exposure for more than 1 hour [OC27]. Wear suitable gloves tested to EN374 [PPE15].
Disposal of wastes [CS28]. Non-dedicated facility [CS82].	Drain down system prior to equipment break-in or maintenance [E65].Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27]. Wear suitable gloves tested to EN374 [PPE15].
Storage [CS67]	Handle substance within a closed system [E47].
Storage [CS67]. With occasional controlled exposure [CS137]	Handle substance within a closed system [E47].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.11a.v1	
Product characteristics	The mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 8.11a.v1) give rise to following releases fractions		

Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.9
	Release fraction to waste water from process before RMMs	0.01
	Release fraction to soil from process before RMMs	0.09
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >0%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS 4]	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	Not applicable	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 5969 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		1
Typical release to water after RMM		1.16E-03 mg/l

17. Exposure scenario 17: Use of mixed-xylenes (aromatic hydrocarbons C8) in agrochemicals - Consumer

17.1. Exposure scenario

Section 1		**Exposure Scenario Title**
Title		**Agrochemicals**
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC12, PC27 (PC22)
Processes, tasks, activities covered		Covers the consumer use in agrochemicals in liquid and solid forms.
Environmental Release Category		ERC 8a, ERC 8d
Specific Environmental Release Category		ESVOC SpERC 8.11b.v1
Section 2		**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.		Consumer exposure was estimated using ECETOC TRAv2.
Section 2.1		**Control of consumer exposure**
Product characteristics		
Physical form of product		liquid
Vapour pressure		950 Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 4.5% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 0g [ConsOC2]; covers skin contact area up to 857.5cm^2 [ConsOC5]
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 1 times per day [ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m^3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Section 2.1.1		**Product categories**
PC12:Fertilizers--Lawn and garden preparations	OC	Unless otherwise stated, covers concentrations up to 4.5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 0.3g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC27_n: Plant protection products--	OC	Unless otherwise stated, covers concentrations up to 4.5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 0.3g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.11b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 8.11b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from wide dispersive use (regional only) [OOC7]	0.9
	Release fraction to wastewater from wide dispersive use [OOC8]	0.01
	Release fraction to soil from wide dispersive use (regional only) [OOC9]	0.09
Technical onsite conditions and	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]	

measures to reduce or limit discharges, air emissions and releases to soil	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements. [OMS4]
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]
Other environmental control measures additional to above	None

Section 3		**Exposure Estimation**
3.1. Health		
		When the recommended risk management measures (RMMs) when available and operational conditions (OCs) are observed, exposure of consumers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment		
		When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
Health sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment		
Environment sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 5969 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		1
Typical release to water after RMM		1.16E-03 mg/l

18. Exposure scenario 18: Use in Fuels of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

18.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in fuels of mixed-xylenes (aromatic hydrocarbons C8)
Sector of Use:	Industrial (SU3, SU10)
Use Descriptor	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC16
	Environmental Release Categories: ERC7
Processes, tasks, activities covered	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Drum/batch transfers [CS8].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC27].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].

General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
General exposures (closed systems) [CS15]. Batch process [CS55].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]	No specific measures identified [EI18].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]Batch process [CS55].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Equipment maintenance [CS5].	Drain down and flush system prior to equipment break-in or maintenance [E55].Retain drain downs in sealed storage pending disposal or for subsequent recycle [ENVT4].
Vessel and container cleaning [CS103]	Provide extract ventilation to points where emissions occur [E54].
Storage [CS67]	No specific measures identified [EI18].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Disposal of wastes [CS28].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC27].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 7.12a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300

Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 7.12a.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.05
	Release fraction to waste water from process before RMMs	0.00001
	Release fraction to soil from process before RMMs	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >95%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Soil emission controls are not applicable as there is no direct release to soil. [TCR 4]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk

	characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 4504505 kg/day after RMM	
Site Use	5 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 95 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.001
Typical release to water after RMM		9.35E-04 mg/l

19. Exposure scenario 19: Use in Fuels of mixed-xylenes (aromatic hydrocarbons C8) - Professional

19.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in Fuels of mixed-xylenes (aromatic hydrocarbons C8) - Professional
Sector of Use:	Professional (SU22)
Use Descriptor	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC16
	Environmental Release Categories: ERC 9A, ERC 9B
Processes, tasks, activities covered	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20 ^{0}C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14].	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
Drum/batch transfers [CS8].	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].

Dipping, immersion and pouring [CS4].	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	No specific measures identified [EI18]. Avoid carrying out activities involving exposure for more than 4 hours [OC 28].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]Batch process [CS55].	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]	No specific measures identified [EI18].
Equipment cleaning and maintenance [CS39].	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
Vessel and container cleaning [CS103]	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
Storage [CS67]	No specific measures identified [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 9.12b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 9.12b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.01
	Release fraction to waste water from process	0.00001
	Release fraction to soil from process (regional only)	0.00001
Technical onsite conditions and measures to reduce or limit discharges, air	Treat air emissions to provide a typical removal efficiency of >0%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	

emissions and releases to soil	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].
	Sludge should be incinerated, contained or reclaimed [OMS3].
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 237 kg/day after RMM	
Site Use	0.0002 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.001
Typical release to water after RMM		5.85E-04 mg/l

20. Exposure scenario 20: Use of mixed-xylenes (aromatic hydrocarbons C8) in fuels - Consumer

20.1. Exposure scenario

Section 1		**Exposure Scenario Title**
Title		**Covers consumer uses in liquid fuels**
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC13
Processes, tasks, activities covered		Covers consumer uses in liquid fuels
Environmental Release Category		ERC 9a, ERC 9b
Specific Environmental Release Category		ESVOC SpERC 9.12c.v1
Section 2		**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.		Consumer exposure was estimated using ECETOC TRAv2.
Section 2.1		**Control of consumer exposure**
Product characteristics		
Physical form of product		liquid
Vapour pressure		950 Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 100% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 37500g [ConsOC2]; covers skin contact area up to 420cm^2 [ConsOC5]
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 0.143 times per day [ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m^3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Section 2.1.1		**Product categories**
PC13:Fuels--Liquid - subcategories added: Automotive Refuelling	OC	Unless otherwise stated, covers concentrations up to 38% [ConsOC1]; covers use up to 52 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 210.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 37500g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m3[ConsOC11]; for each use event, covers exposure up to 0.05hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated
PC13:Fuels--Liquid - subcategories added: Scooter Refuelling	OC	Unless otherwise stated, covers concentrations up to 38% [ConsOC1]; covers use up to 52 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 210.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 3750g [ConsOC2]; covers outdoor use [ConsOC12]; covers

		use in room size of 100m3[ConsOC11]; for each use event, covers exposure up to 0.03hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated
PC13:Fuels--Liquid - subcategories added: Garden Equipment - Use	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 26 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 750g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated
PC13:Fuels--Liquid (subcategories added): Garden Equipment - Refueling	OC	Unless otherwise stated, covers concentrations up to 38% [ConsOC1]; covers use up to 26 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 420.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 750g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.03hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated
PC13:Fuels--Liquid - subcategories added: Lamp oil	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 52 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 210.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 100g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.01hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 9.12c.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.01
	Release fraction to waste water from process	0.00001

	Release fraction to soil from process (regional only)	0.00001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >0%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	This substance is consumed during use and no waste of the substance is generated. [ETW 5]	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated. [EWR 3]	
Other environmental control measures additional to above	None	

Section 3		**Exposure Estimation**
3.1. Health		
		When the recommended risk management measures (RMMs) when available and operational conditions (OCs) are observed, exposure of consumers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment		
		When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
		Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment		
Environment sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 237 kg/day after RMM	
Site Use	0.0002 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)	0.001	
Typical release to water after RMM	5.85E-04 mg/l	

21. Exposure scenario 21: Use in Polymer Production of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

21.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	**Use in Polymer Production of mixed-xylenes (aromatic hydrocarbons C8) - Industrial**
Sector of Use:	Industrial (SU3, SU10)
Use Descriptor	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC14, PROC21
	Environmental Release Categories: ERC4. ERC6C
Processes, tasks, activities covered	Manufacture of polymers from monomers in continuous and batch processes, include sparging, discharging, and reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing).
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) [CS15]. Continuous process [CS54]. ; No sampling [CS57].	No specific measures identified [EI18].
Bulk transfers [CS14]. Transport [CS58]. ; With sample collection [CS56].	Ensure material transfers are under containment or extract ventilation [E66].

Polymerisation (bulk and batch) [CS65]Continuous process [CS54]. ; With sample collection [CS56].	No specific measures identified [EI18].
Polymerisation (bulk and batch) [CS65]Batch process [CS55]. ; With sample collection [CS56].	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11], or [G9], Ensure operation is undertaken outdoors [E69].
Finishing operations [CS102]Batch process [CS55]. ; With sample collection [CS56]. Catalyst inactivation and removal, washing and stripping / distillation to remove unreacted monomer	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11], or [G9], Ensure operation is undertaken outdoors [E69].
Intermediate polymer storage [CS66]	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11], or [G9], Ensure operation is undertaken outdoors [E69].
Additivation and stabilisation [CS69]	Provide extract ventilation to points where emissions occur [E54].
Mixing in containers [CS23].Batch process [CS55].	Provide extract ventilation to points where emissions occur [E54].
Pelletizing [CS53]. Extrusion and masterbatching [CS88]	Provide extract ventilation to points where emissions occur [E54]. Avoid carrying out activities involving exposure for more than 4 hours [OC 28]
Pelletizing [CS53].	Provide extract ventilation to points where emissions occur [E54].
Pelletisation and pellet screening [CS68](open systems) [CS108]	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Bulk transfers [CS14]. Continuous process [CS54]. ; With sample collection [CS56].	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) [E11], or [G9], Ensure operation is undertaken outdoors [E69].
Transport [CS58]. With sample collection [CS56].	Ensure material transfers are under containment or extract ventilation [E66].
Equipment maintenance [CS5].	Drain down and flush system prior to equipment break-in or maintenance [E55].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.21a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year

	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.01
	Release fraction to waste water from process	0.003
	Release fraction to soil from process (regional only)	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	This substance is consumed during use and no waste of the substance is generated. [ETW 5]	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated. [EWR 3]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 22989 kg/day after RMM	
Site Use	0.1 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 80 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.3
Typical release to water after RMM		2.69E-03 mg/l

22. Exposure scenario 22: Use in Polymer Processing of mixed-xylenes (aromatic hydrocarbons C8)- Industrial

22.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in polymer processing of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Industrial (SU3, SU10)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC21
	Environmental Release Categories: ERC 4, ERC 6d
Processes, tasks, activities covered	Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20ºC above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14]. (closed systems) [CS107].	Handle substance within a closed system [E47].
Bulk transfers [CS14]. (closed systems) [CS107]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
Bulk transfers [CS14]. Dedicated facility [CS81].	Transfer via enclosed lines [E52].

Bulk weighing [CS91]. (closed systems) [CS107].	Handle substance within a closed system [E47].
Bulk weighing [CS91]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47].
Small scale weighing [CS90].	Ensure material transfers are under containment or extract ventilation [E66].
Additive premixing [CS92]. (closed systems) [CS107].	Ensure material transfers are under containment or extract ventilation [E66].
Additive premixing [CS92]. (open systems) [CS108]. With sample collection [CS56].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Additive premixing [CS92]. General exposures (open systems) [CS16].	Ensure material transfers are under containment or extract ventilation [E66].
Bulk transfers [CS14]. Drum/batch transfers [CS8].	Transfer via enclosed lines [E52].
Bulk transfers [CS14]. Small package filling [CS7].	Transfer via enclosed lines [E52].
Calendering (including Banburys) [CS64].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Production of articles by dipping and pouring [CS113].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Extrusion and masterbatching [CS88].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Injection moulding of articles [CS89].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Equipment maintenance [CS5].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]. With occasional controlled exposure [CS137].	Store substance within a closed system [E84].

Section 2.2	**Control of environmental exposure**
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.21a.v1
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable

Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 4.21a.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.5
	Release fraction to waste water from process before RMMs	0
	Release fraction to soil from process before RMMs	0.00001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]	
Other environmental control measures additional to above	None	

Section 3	Exposure Estimation
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 2047502 kg/day after RMM	
Site Use	5 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 80 % removal efficiency air emission	
Dilution factors	Freshwater	10

	Marine water	100
Initial release percent at site to water (before RMM)		0
Typical release to water after RMM		5.85E-04 mg/l

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23. Exposure scenario 23: Use in Polymer Processing of mixed-xylenes (aromatic hydrocarbons C8) - Professional

23.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in polymer processing of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC8a, PROC8b, PROC14, PROC21
	Environmental Release Categories: ERC 8A, ERC 8D
Processes, tasks, activities covered	Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is > 10 kPa [OC5].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2].
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]. Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14]. (closed systems) [CS107].	Handle substance within a closed system [E47].
Bulk transfers [CS14]. (closed systems) [CS107]. With occasional controlled exposure [CS137].	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Material transfers [CS3].	Transfer via enclosed lines [E52].
Injection moulding of articles [CS89].	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Rework of articles [CS86].	No specific measures identified [EI18].

Equipment maintenance [CS5].	Drain down system prior to equipment break-in or maintenance [E65]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].
Storage [CS67].	Handle substance within a closed system [E47].No specific measures identified [EI18].
Storage [CS67]. With occasional controlled exposure [CS137]	Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.21b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	50 ktons/year
	Regional tonnage	5 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Conditions given in SPERC fact sheet (ESVOC SpERC 8.21b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process before RMMs	0.98
	Release fraction to waste water from process before RMMs	0.01
	Release fraction to soil from process before RMMs	0.01
Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Treat air emissions to provide a typical removal efficiency of >0% [TCR7].	

releases to soil	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]
Organisation measures to prevent/limit release from site	OMS 2: Do not apply industrial sludge to natural soils.
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	ETW 3: External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	ERW 1: External recovery and recycling of waste should comply with applicable local and/or national regulations.
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for

wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 5969 kg/day after RMM	
Site Use	0.01 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		1
Typical release to water after RMM		1.16E-03 mg/l

24. Exposure scenario 24: Use in Functional fluids of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

24.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in functional fluids of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Industrial (SU3, SU8, SU9)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC 8a, PROC 8b, PROC9
	Environmental Release Categories: ERC7
Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14].	No specific measures identified [EI18].
Bulk transfers [CS14]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Bulk transfers [CS14]. Batch process [CS55].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR; [G9], Ensure operation is undertaken outdoor [E69].
Bulk transfers [CS14].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR; [G9], Ensure operation is undertaken outdoor [E69].
Drum/batch transfers [CS8]. Dedicated facility	Ensure material transfers are under containment or extract

[CS81].	ventilation [E66].
Pelletizing [CS53]. ; (closed systems) [CS107]	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Filling / preparation of equipment from drums or containers. [CS45].	Use drum pumps or carefully pour from container [E64].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
General exposures (open systems) [CS16].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR; [G9], Ensure operation is undertaken outdoor [E69].
General exposures (open systems) [CS16].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR; [G9], Ensure operation is undertaken outdoor [E69].; Provide extract ventilation to points where emissions occur [E54].
Remanufacture of reject articles [CS19].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR; [G9], Ensure operation is undertaken outdoor [E69].; Provide extract ventilation to points where emissions occur [E54].
Equipment maintenance [CS5].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]	No specific measures identified [EI18].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 7.13a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.01
	Release fraction to waste water from process	0.0003
	Release fraction to soil from process (regional only)	0.001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater	

	[TCR14].
Organisation measures to prevent/limit release from site	OMS 2: Do not apply industrial sludge to natural soils.
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	ETW 3: External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	ERW 1: External recovery and recycling of waste should comply with applicable local and/or national regulations.
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for

wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 105820 kg/day after RMM	
Site Use	0.1 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.03
Typical release to water after RMM		7.95E-04 mg/l

25. Exposure scenario 25: Use in Functional fluids of mixed-xylenes (aromatic hydrocarbons C8) - Professional

25.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in functional fluids of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Professional SU22
	Process Categories: PROC1, PROC2, PROC3, PROC 8a, PROC9, PROC20
	Environmental Release Categories: ERC 9A, ERC 9B
Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Drum/batch transfers [CS8]. Non-dedicated facility [CS82].	Use drum pumps or carefully pour from container [E64].Avoid carrying out activities involving exposure for more than 4 hours [OC28].
Transfer from/pouring from containers [CS22].	Use drum pumps or carefully pour from container [E64].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR; [G9], Ensure activity is undertaken outdoors [E69].
Filling / preparation of equipment from drums or containers. [CS45].	Use drum pumps or carefully pour from container [E64].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR; [G9], Ensure activity is undertaken outdoors [E69].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
General exposures (open systems) [CS16]. At elevated temperature (product at 80oC)	Provide extract ventilation to points where emissions occur [E54].

Remanufacture of reject articles [CS19].	Drain down system prior to equipment break-in or maintenance [E65].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR; [G9], Ensure activity is undertaken outdoors [E69].
Equipment maintenance [CS5]. Non-dedicated facility [CS82].	Drain down system prior to equipment break-in or maintenance [E65].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR; [G9], Ensure activity is undertaken outdoors [E69].
Storage [CS67]With occasional controlled exposure [CS137]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR; [G9], Ensure activity is undertaken outdoors [E69].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 9.13b.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.05
	Release fraction to waste water from process	0.025
	Release fraction to soil from process (regional only)	0.025
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >0% [TCR7].	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organization measures to prevent/limit release from site	OMS 2: Do not apply industrial sludge to natural soils.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	ETW 3: External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	ERW 1: External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Other environmental control measures additional to above	None	

Section 3	Exposure Estimation
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 225 kg/day after RMM	
Site Use	0.0002 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		2.5

Typical release to water after RMM	6.14E-04 mg/l

.

26. Exposure scenario 26: Use of mixed-xylenes (aromatic hydrocarbons C8) in functional fluids - Consumer

26.1. Exposure scenario

Section 1		**Exposure Scenario Title**
Title		**Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants**
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC16, PC17
Processes, tasks, activities covered		Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants
Environmental Release Category		ERC 9a, ERC 9b
Specific Environmental Release Category		ESVOC SpERC 9.13c.v1
Section 2		**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.		Consumer exposure was estimated using ECETOC TRAv2.
Section 2.1		**Control of consumer exposure**
Product characteristics		
Physical form of product		liquid
Vapour pressure		950 Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 50% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 2200g [ConsOC2]; covers skin contact area up to 468cm^2 [ConsOC5]
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 0.010958904109589 times per day [ConsOC4]; covers exposure up to 0.166666666666667 hours per event [ConsOC14]
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m^3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Section 2.1.1		**Product categories**
PC16_n: Heat transfer fluids--Liquids	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2200g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC17_n: Hydraulic fluids--Liquids	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2200g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 9.13c.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.05
	Release fraction to waste water from process	0.025
	Release fraction to soil from process (regional only)	0.025
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organisation measures to prevent/limit release from site	OMS 2: Do not apply industrial sludge to natural soils.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	ETW 3: External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	ERW 1: External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Other environmental control measures additional to above	None

Section 3		Exposure Estimation
3.1. Health		
		When the recommended risk management measures (RMMs) when available and operational conditions (OCs) are observed, exposure of consumers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment		
		When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
Health sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment		
Environment sub-headings		Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 225 kg/day after RMM	
Site Use	0.0002 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		2.5

Typical release to water after RMM	6.14E-04 mg/l

.

27. Exposure scenario 27: Use in Oil Field Industry of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

27.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in oil field drilling and production operations of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Industrial (SU3, SU10)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b
	Environmental Release Categories: ERC4
Processes, tasks, activities covered	Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Filling / preparation of equipment from drums or containers. [CS45].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Drill floor operations [CS116].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].

Drill floor operations [CS116].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].
Operation of solids filtering equipment - vapour exposures [CS118].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].
Operation of solids filtering equipment - aerosol exposures [CS119].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].
Operation of solids filtering equipment [CS117].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Treatment and disposal of filtered solids [CS121].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].
Process sampling [CS2].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken outdoors [E69].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
Pouring from small containers [CS9].	Use drum pumps or carefully pour from container [E64].
General exposures (open systems) [CS16].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], or: [G9], Ensure operation is undertaken outdoors [E69].
Equipment cleaning and maintenance [CS39].	Use drum pumps or carefully pour from container [E64].
Batch process [CS55].	No specific measures identified [EI18].
Batch process [CS55]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.5a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	Not applicable
	Local marine water dilution factor	Not applicable
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	Not applicable
	Release fraction to waste water from process	Not applicable

	Release fraction to soil from process (regional only)	Not applicable
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Discharge to aquatic environment is restricted (see Section 4.2)	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements.	
Conditions and measures related to municipal sewage treatment plant	Not applicable	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Other environmental control measures additional to above	Not applicable	
Basis for scaling	Not applicable	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency.

28. Exposure scenario 28: Use in Oil Field Industry of mixed-xylenes (aromatic hydrocarbons C8) - Professional

28.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in oil field drilling and production operations of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b
	Environmental Release Categories: ERC8D
Processes, tasks, activities covered	Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14].	Transfer via enclosed lines [E52].
Filling / preparation of equipment from drums or containers. [CS45].	Transfer via enclosed lines [E52].
Drill floor operations [CS116].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken outdoors [E69].
Drill floor operations [CS116].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken

	outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27]
Operation of solids filtering equipment - vapour exposures [CS118].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Operation of solids filtering equipment - aerosol exposures [CS119].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Operation of solids filtering equipment [CS117].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Treatment and disposal of filtered solids [CS121].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken outdoors [E69].
Process sampling [CS2].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken outdoors [E69].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
Pouring from small containers [CS9].	Use drum pumps or carefully pour from container [E64].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken outdoors [E69].
General exposures (open systems) [CS16].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Equipment cleaning and maintenance [CS39].	Drain down and flush system prior to equipment break-in or maintenance [E55].
Batch process [CS55].	No specific measures identified [EI18].
Batch process [CS55]. With occasional controlled exposure [CS137]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. OR Ensure operation is undertaken outdoors [E69]. No specific measures identified [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.5a.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	Not applicable
Frequency and duration of use	Emission days per year	Not applicable
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	Not applicable
	Local marine water dilution factor	Not applicable
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	Not applicable
	Release fraction to waste water from process	Not applicable

	Release fraction to soil from process (regional only)	Not applicable
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Discharge to aquatic environment is restricted (see Section 4.2)	
Organisation measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements.	
Conditions and measures related to municipal sewage treatment plant	Not applicable	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Other environmental control measures additional to above	Not applicable	
Basis for scaling	Not applicable	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency.

29. Exposure scenario 29: Use in Road Construction of mixed-xylenes (aromatic hydrocarbons C8) - Professional

29.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in road and construction appliances of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13
	Environmental Release Categories: ERC 8D & 8F
Processes, tasks, activities covered	Application of surface coatings and binders in road and construction activities, including paving uses, manual mastic and in the application of roofing and water-proofing membranes.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Drum/batch transfers [CS8]. ; Non-dedicated facility [CS82]	Use drum pumps or carefully pour from container [E64].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].
Drum/batch transfers [CS8]. ; Dedicated facility [CS81]	Ensure material transfers are under containment or extract ventilation [E66]. ; Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].
Manual roller application or brushing [CS13].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Spraying/fogging by machine application	Ensure operation is undertaken outdoors [E69]. ;

[CS25].	Provide extract ventilation to points where emissions occur [E54], OR; [G9], Operate away from sources of substance emission or release [E77]. Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Dipping, immersion and pouring [CS4].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Equipment cleaning and maintenance [CS39].	Drain down and flush system prior to equipment break-in or maintenance [E55].Provide extract ventilation to points where emissions occur [E54], OR; [G9], Operate away from sources of substance emission or release [E77]. Retain drain downs in sealed storage pending disposal or for subsequent recycle [ENVT4].
Storage [CS67]	No specific measures identified [EI18].
Storage [CS67]With occasional controlled exposure [CS137]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.15.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.95
	Release fraction to waste water from process	0.01
	Release fraction to soil from process (regional only)	0.04
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >0% [TCR7].	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organization measures to prevent/limit release from site	OMS 2: Do not apply industrial sludge to natural soils.	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	

	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	ETW 3: External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	ERW 1: External recovery and recycling of waste should comply with applicable local and/or national regulations.
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment
	Risk-driving Compartment – Freshwater sediment
	Msafe: 232 kg/day after RMM

Site Use	0.0002 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		1
Typical release to water after RMM		5.97E-04 mg/l

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30. Exposure scenario 30: Use in Laboratory applications of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

30.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in laboratory reagents of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Industrial (SU3, SU10)
	Process Categories: PROC10, PROC15
	Environmental Release Categories: ERC 2 & 4
Processes, tasks, activities covered	Use of the substance within laboratory settings, including material transfers and equipment cleaning.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Laboratory activities [CS36]. Small scale [CS61]. Handling small quantities (<1000ml) for more than 4 hours/day - inside fume cupboard.	No specific measures identified [EI18].
Cleaning [CS47]. Rolling, Brushing [CS51]. ; Vessel and container cleaning [CS103]Cleaning equipment, glassware etc under general ventilation for 15 min - 1 hour/day	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].

Section 2.2	**Control of environmental exposure**
Assessment method	Environmental exposure and indirect exposure of humans through the

	environment were estimated using EUSES 2.1.1 using default release fractions from propose to assess using ERCs	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	1.00E+00
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.025
	Release fraction to waste water from process	0.02
	Release fraction to soil from process (regional only)	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of >0% [TCR7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
Organization measures to prevent/limit release from site	OMS 2: Do not apply industrial sludge to natural soils.	
	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	ETW 3: External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	ERW 1: External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 3469 kg/day after RMM	
Site Use	0.1 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)	2	
Typical release to water after RMM	1.46E-02 mg/l	

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31. Exposure scenario 31: Use in Laboratory Applications of the xylenes mixed-xylenes - Professional

31.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	**Use in laboratory reagents of mixed-xylenes (aromatic hydrocarbons C8)**
isUse Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC10, PROC15
	Environmental Release Categories: ERC 8a
Processes, tasks, activities covered	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Laboratory activities [CS36]. Small scale [CS61]. Fume-cupboard Activity [CS139].	No specific measures identified [EI18].
Cleaning [CS47]. Rolling, Brushing [CS51]. ; Vessel and container cleaning [CS103]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].; Handle in a fume cupboard or under extract ventilation [E83].

Section 2.2	Control of environmental exposure
Assessment method	Environmental exposure and indirect exposure of humans through the environment

	were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 8.17.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	2.00E-03
Frequency and duration of use	Emission days per year	365
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.5
	Release fraction to waste water from process	0.5
	Release fraction to soil from process (regional only)	0
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emission to provide a typical removal efficiency of >0% [TCR7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Soil emission controls are not applicable as there is no direct release to soil. [TCR4]	
Organization measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. [OMS2]	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8(%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 119 kg/day after RMM	
Site Use	0.0002 ktons/year	
On-site emission factors	95.8% efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		50
Typical release to water after RMM		1.16E-03 mg/l

32. Exposure scenario 32: Use in Explosives of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

32.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in explosive manufacture and use of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Industrial (SU3, SU8, SU9)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15
	Environmental Release Categories: ERC2
Processes, tasks, activities covered	Covers exposures arising from the manufacture and use of slurry explosives (including materials transfer, mixing and charging) and equipment cleaning.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14]. 1-4 hours, ambient temp.	Provide a good standard of controlled ventilation (not less than 3 to 5 air changes per hour) [E11]; OR [G9] Ensure activity is undertaken outdoors [E69].
Drum/batch transfers [CS8]. 1-4 hours, ambient temp.	Provide a good standard of controlled ventilation (not less than 3 to 5 air changes per hour) [E11]; OR [G9] Ensure activity is undertaken outdoors [E69].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
Mixing in containers [CS23].; (closed systems) [CS107]1-4 hours, ambient temp.	Provide a good standard of controlled ventilation (not less than 3 to 5 air changes per hour) [E11]; OR [G9] Ensure activity is undertaken outdoors [E69].
Mixing in containers [CS23].; (closed systems) [CS107]1-4 hours, ambient	Provide a good standard of controlled ventilation (not less than 3 to 5 air changes per hour) [E11]; OR [G9] Ensure activity is undertaken

temp.	outdoors [E69].
Mixing in containers [CS23].; (open systems) [CS108]1-4 hours, ambient temp.	Provide extract ventilation to points where emissions occur [E54]. Avoid carrying out activities involving exposure for more than 4 hours [OC 28].
Material transfers [CS3]. <1 hours, ambient temp.	Provide a good standard of controlled ventilation (not less than 3 to 5 air changes per hour) [E11]; OR [G9] Ensure activity is undertaken outdoors [E69].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
Transfer from/pouring from containers [CS22]. ; Non-dedicated facility [CS82]<1 hours, ambient temp.	Use drum pumps [E53].Provide a good standard of controlled ventilation (not less than 3 to 5 air changes per hour) [E11]; OR [G9] Ensure activity is undertaken outdoors [E69].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
Clean down and maintenance [CS26].	Provide a good standard of controlled ventilation (not less than 3 to 5 air changes per hour) [E11]; OR [G9] Ensure activity is undertaken outdoors [E69].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
Equipment maintenance [CS5].	Drain down system prior to equipment break-in or maintenance [E65].Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) [E40].
Storage [CS67] daily; ambient temp.	Ensure operation is undertaken outdoors [E69].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 2.18.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.0005
	Release fraction to waste water from process	0.0003
	Release fraction to soil from process (regional only)	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organisation measures to	Do not apply industrial sludge to natural soils [OMS2].	

prevent/limit release from site	Sludge should be incinerated, contained or reclaimed [OMS3].
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet

(http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Freshwater sediment	
	Msafe: 105820 kg/day after RMM	
Site Use	0.1 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 80 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.03
Typical release to water after RMM		7.95E-04 mg/l

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33. Exposure scenario 33: Use in Rubber manufacture of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

33.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in rubber manufacture of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC13, PROC14, PROC21
	Environmental Release Categories: ERC1, ERC4, ERC6D
	Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing.
Processes, tasks, activities covered	Sector of Use: Industrial (SU10)
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Material transfers [CS3].	No specific measures identified [EI18].
Material transfers [CS3]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Material transfers [CS3]. Dedicated facility [CS81].Large Containers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11], OR: [G9], Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Bulk weighing [CS91](closed systems) [CS107].	No specific measures identified [EI18].

Bulk weighing [CS91]With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Small scale weighing [CS90] Dedicated facility [CS81].	Ensure material transfers are under containment or extract ventilation [E66].
Additive premixing [CS92] Batch process [CS55]. ; (closed systems) [CS107].	Provide extract ventilation to material transfer points and other openings [E82].
Additive premixing [CS92]	Provide extract ventilation to points where emissions occur [E54].
Material transfers [CS3]. Dedicated facility [CS81].	Ensure material transfers are under containment or extract ventilation [E66]. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) [E40].
Material transfers [CS3]. Small Containers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11], OR: [G9], Ensure operation is undertaken outdoors [E69]. ; Provide extract ventilation to points where emissions occur [E54].
Additive premixing [CS92] Mixing operations (open systems) [CS30].	Provide extract ventilation to points where emissions occur [E54].
Calendering (including Banburys) [CS64]	Restrict area of openings to equipment [E68].Provide extract ventilation to points where emissions occur [E54].
Calendering (including Banburys) [CS64]	Restrict area of openings to equipment [E68].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Pressing uncured rubber blanks [CS73]	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].
Vulcanisation [CS70]	Restrict area of openings to equipment [E68].Provide extract ventilation to points where emissions occur [E54].
Cooling cured articles [CS71]	Provide extract ventilation to points where emissions occur [E54].
Laboratory activities [CS36].	Handle in a fume cupboard or under extract ventilation [E83].
Equipment maintenance [CS5].	Drain or remove substance from equipment prior to break-in or maintenance [E81].Retain drain downs in sealed storage pending disposal or for subsequent recycle [ENVT4].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.19.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	1.00E+00
Frequency and duration of use	Emission days per year	300
Environmental Factors not	Local Freshwater dilution factor	10

influenced by risk management	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.01
	Release fraction to waste water from process	0.003
	Release fraction to soil from process (regional only)	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >0%. [TCR 8]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	
Organization measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].	
	Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]	
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]	
Conditions and measures related to external treatment of waste for disposal	This substance is consumed during use and no waste of the substance is generated..[ETW 5]	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated. [EWR 3]	
Other environmental control measures additional to above	None	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.

4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 22989 kg/day after RMM	
Site Use	0.1 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 0 % removal efficiency air emission	
Dilution factors	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		0.3
Typical release to water after RMM		2.69E-03 mg/l

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34. Exposure scenario 34: Use in Mining chemicals of mixed-xylenes (aromatic hydrocarbons C8) - Industrial

34.1. Exposure scenario

Section 1	**Exposure Scenario Title**
Title	Use in mining chemicals of mixed-xylenes (aromatic hydrocarbons C8)
Use Descriptor	Sector of Use: Industrial (SU3, SU8, SU9)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9
	Environmental Release Categories: ERC4
Processes, tasks, activities covered	Covers the use of the substance in extraction processes at mining operations, including material transfers, winning and separation activities, and substance recovery and disposal.
Section 2	**Operational conditions and risk management measures**
Field for additional statements to explain scenario if required.	Worker exposure was estimated using ECETOC TRAv2.
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure is 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers [CS14]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Drum/batch transfers [CS8]. Dedicated facility [CS81].	Use drum pumps [E53].
Pouring from small containers [CS9].	Provide a good standard of controlled ventilation (not less than 3 to 15 air changes per hour) [E11].Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
General exposures (closed systems) [CS15]. Batch process [CS55].	Provide a good standard of controlled ventilation (not less than 3 to 15 air changes per hour) [E11], OR; [G9], Ensure operation is undertaken outdoors [E69].

General exposures (open systems) [CS16].	Provide extract ventilation to points where emissions occur [E54].
phase separation [CS106]; (closed systems) [CS107]	Provide a good standard of controlled ventilation (not less than 3 to 15 air changes per hour) [E11], OR; [G9], Ensure operation is undertaken outdoors [E69].
Ion exchange processes [CS105]; (closed systems) [CS107]With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Process sampling [CS2]. Batch process [CS55]. ; (closed systems) [CS107].	Provide a good standard of controlled ventilation (not less than 3 to 15 air changes per hour) [E11], OR; [G9], Ensure operation is undertaken outdoors [E69].
Mixing in containers [CS23].; (closed systems) [CS107]	No specific measures identified [EI18].
Equipment cleaning and maintenance [CS39]. Non-dedicated facility [CS82].	Provide a good standard of controlled ventilation (not less than 3 to 15 air changes per hour) [E11], OR; [G9], Ensure operation is undertaken outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC 27].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Storage [CS67]	No specific measures identified [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	Environmental exposure and indirect exposure of humans through the environment were estimated using EUSES 2.1.1 using default release fractions from ESVOC SpERC 4.19.v1	
Product characteristics	The Mixed-xylenes (aromatic hydrocarbons C8) consist of liquids of medium volatility. The water solubility for the mixed-xylenes is 166mg/l; the vapour pressure is 5840 Pa at 25°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	EU tonnage	1 ktons/year
	Regional tonnage	0.1 ktons/year
	Fraction of main local source	1.00E+00
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by risk management	Local Freshwater dilution factor	10
	Local marine water dilution factor	100
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.25
	Release fraction to waste water from process	0.5
	Release fraction to soil from process (regional only)	0.05
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Treat air emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 95.8%. [TCR 11]	
	Prevent discharge of undissolved substance to or recover from wastewater [TCR14].	

Organization measures to prevent/limit release from site	Do not apply industrial sludge to natural soils [OMS2].
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 95.8 (%) [STP3]
	Assumed domestic sewage treatment plant flow is 2000 (m^3/d) [STP5]
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW 3]
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.[ERW 1]
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.
3.2. Environment	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	Check that RMMs and OCs are as described or of equivalent efficiency.
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 95.8% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. DSU 4 :

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).		
Basis for scaling	Environment	
	Risk-driving Compartment – Soil	
	Msafe: 139 kg/day after RMM	
Site Use	0.025 ktons/year	
On-site emission factors	95.8 % efficiency water treatment in STP, 80 % removal efficiency air emission	
	Freshwater	10
	Marine water	100
Initial release percent at site to water (before RMM)		50
Typical release to water after RMM		8.82E-02 mg/l

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