

PARA-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

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Version: 13.3

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

1.1. Product identifier

Product form : Substance
 Substance name : PARA-XYLENE
 EC No : 203-396-5
 CAS No : 106-42-3
 REACH registration No : TOTAL RAFFINAGE FRANCE (01-2119484661-33-0006) -
 Synonyms : 106-42-3
 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 in Oil field drilling and production operations
 Use as binders and release agents
 Use in Agrochemicals
 Use as a fuel
 Use in laboratories
 Rubber production and processing
 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



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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
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. Harmful to aquatic life with long lasting effects.

2.2. Label elements

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

Hazard pictograms (CLP) :



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
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

Name	: PARA-XYLENE
CAS No	: 106-42-3
EC No	: 203-396-5

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
p-Xylene (Note C)	(CAS No) 106-42-3 (EC No) 203-396-5	> 99	Flam. Liq. 3, H226 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation:vapour), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Asp. Tox. 1, H304 Aquatic Chronic 3, H412

Note C : Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.



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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, CO ₂). 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.



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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.

7.3. Specific end use(s)

Recommended to professional users.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

p-Xylene (106-42-3)		
EU	IOELV TWA (mg/m ³)	221 mg/m ³ (pure)
EU	IOELV TWA (ppm)	50 ppm (pure)
EU	IOELV STEL (mg/m ³)	442 mg/m ³ (pure)
EU	IOELV STEL (ppm)	100 ppm (pure)
Ireland	OEL (8 hours ref) (mg/m ³)	221 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	50 ppm
Ireland	OEL (15 min ref) (mg/m ³)	442 mg/m ³
Ireland	OEL (15 min ref) (ppm)	100 ppm
United Kingdom	WEL TWA (mg/m ³)	220 mg/m ³
United Kingdom	WEL TWA (ppm)	50 ppm
United Kingdom	WEL STEL (mg/m ³)	441 mg/m ³
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)

PARA-XYLENE (106-42-3)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	442 mg/m ³
Acute - local effects, inhalation	442 mg/m ³
Long-term - systemic effects, dermal	3182 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	221 mg/m ³
Long-term - local effects, inhalation	221 mg/m ³
DNEL/DMEL (General population)	
Acute - systemic effects, inhalation	260 mg/m ³
Acute - local effects, inhalation	260 mg/m ³
Long-term - systemic effects, oral	12.5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	65.3 mg/m ³
Long-term - systemic effects, dermal	1872 mg/kg bodyweight/day
Long-term - local effects, inhalation	65.3 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.25 mg/l
PNEC aqua (marine water)	0.25 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	14.33 mg/kg dwt



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PARA-XYLENE (106-42-3)	
PNEC sediment (marine water)	14.33 mg/kg dwt
PNEC (Soil)	
PNEC soil	2.41 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	5 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	: 13 °C
Freezing point	: No data available
Boiling point	: 138 °C
Flash point	: 27 °C
Auto-ignition temperature	: > 530 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: 11.5 hPa (20°C)
Relative vapour density at 20 °C	: 3.7
Relative density	: No data available
Density	: 860 kg/m ³
Solubility	: insoluble. Water: 146 - 191 mg/l
Log Pow	: 3.1 - 3.2



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Viscosity, kinematic	: < 0.9 mm ² /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

p-Xylene (106-42-3)	
LD50 oral rat	4300 mg/kg
LD50 dermal rabbit	> 4200 mg/kg
LC50 inhalation rat	21.7 mg/l/4h

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)	: Not classified
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 aspirated into the lung and induce a chemical pneumonitis developing over a few hours

PARA-XYLENE (106-42-3)	
Viscosity, kinematic	< 0.9 mm ² /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.



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PARA-XYLENE (106-42-3)	
NOEC chronic algae	0.44 mg/l
p-Xylene (106-42-3)	
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)

12.2. Persistence and degradability

PARA-XYLENE (106-42-3)	
Persistence and degradability	Inherently biodegradable.

12.3. Bioaccumulative potential

PARA-XYLENE (106-42-3)	
Log Pow	3.1 - 3.2
p-Xylene (106-42-3)	
BCF fish 1	0.6 - 15
Log Pow	2.77 - 3.15

12.4. Mobility in soil

PARA-XYLENE (106-42-3)	
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



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14.6. Special precautions for user

- Overland transport

Classification code (ADR)	: F1
Limited quantities (ADR)	: 5I
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



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- 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.	p-Xylene
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PARA-XYLENE is not on the REACH Candidate List

PARA-XYLENE is not on the REACH Annex XIV List

15.1.2. National regulations

Complies the United States TSCA (Toxic Substances Control Act) inventory
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Canadian DSL (Domestic Substances List)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the China Inventory of Existing Chemical Substances (IECSC)

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: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. 3	Flammable liquids, Category 3
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H226	Flammable liquid and vapour
H304	May be fatal if swallowed and enters airways
H312	Harmful in contact with skin



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H315	Causes skin irritation
H319	Causes serious eye irritation
H332	Harmful if inhaled
H335	May cause respiratory irritation
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 Scenario for p-xylene (CAS 106-42-3)

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1. Exposure scenario 1: Manufacture of xylenes - Industrial

1.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Manufacture of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3, SU8, SU9)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15
	Environmental Release Categories: ERC1, ERC4
Processes, tasks, activities covered	Manufacture of xylene isomers 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 > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
	0
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],



General exposures (closed systems) [CS15].	No specific measures identified [E118].
General exposures (closed systems) [CS15]. With sample collection [CS56]. With occasional controlled exposure [CS137]	No specific measures identified [E118].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	No specific measures identified [E118].
General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56].	No specific measures identified [E118].
Process sampling [CS2].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40], or Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Laboratory activities [CS36].	No specific measures identified [E118].
Bulk transfers [CS14]. (open systems) [CS108]With potential for aerosol generation [CS138].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40], or Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Bulk transfers [CS14]. (closed systems) [CS107];	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40], or 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]	No specific measures identified [E118].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	4200 ktons/year	
	Regional tonnage	600 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 exposure	Release fraction to air from process	0.005	
	Release fraction to waste water	0.003	



	from process	
	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 >90%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.



Values for Scaling Purposes

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 – Sewage Treatment Plant	
	Msafe: 6.4E+06 kg/day after RMM	
Substance Use	600 ktons/year	
On-site risk management measures	93.57 % 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)	0.3	
Typical release to water after RMM	3.62E-02 mg/l	



2. Exposure scenario 2: Use of xylenes as intermediates

Human health assessment is not required for this use, use as an intermediate is included in the manufacture of the xylene isomers, see section 1.

2.1. 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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.	
Amounts Used	EU tonnage	3570 ktons/year
	Regional tonnage	357 ktons/year
	Fraction of main local source	0.01
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	0.005
	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 93.57%. [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 93.57 (%) [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
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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, 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	Not applicable
4.2. Environment	Check that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
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: 1.76E+04kg/day after RMM	
Substance Use	3.57 ktons/year	
On-site risk management measures	93.57 % 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	1.19E-01 mg/l	



3. Exposure scenario 3: Distribution of xylenes

3.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Distribution of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3, SU8, SU9)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15
	Environmental Release Categories: ERC1 (loading) ERC2 (repacking)
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
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General exposures (closed systems) [CS15].	No specific measures identified [E118].
General exposures (closed systems) [CS15]. ; With sample collection [CS56]. With occasional controlled exposure [CS137]	No specific measures identified [E118].



General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	No specific measures identified [E118].
General exposures (open systems) [CS16]. Batch process [CS55]. ; With sample collection [CS56].	No specific measures identified [E118].
Process sampling [CS2].	No specific measures identified [E118].
Laboratory activities [CS36].	No specific measures identified [E118].
Bulk transfers [CS14]. ; (closed systems) [CS107]	Ensure material transfers are under containment or extract ventilation [E66], or: [G9], Operate activity away from sources or emission or release [E77].
Bulk transfers [CS14]. ; (open systems) [CS108]	Ensure material transfers are under containment or extract ventilation [E66], or: [G9], Operate activity away from sources or emission or release [E77].
Drum and small package filling [CS6].	Fill containers/cans at dedicated fill points supplied with local extract ventilation [E51] Ensure material transfers are under containment or extract ventilation [E66].
Equipment cleaning and maintenance [CS39].	Drain down and flush system prior to equipment break-in or maintenance [E55]. Apply vessel entry procedures including use of forced supplied air [AP15].
Storage [CS67] With occasional controlled exposure [CS137]	Store substance within a closed system [E84]. No specific measures identified [E118].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	4200 ktons/year	
	Regional tonnage	600 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 1. 1b.v1) give rise to following releases fractions			
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.0001	
	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 >90%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.



Values for Scaling Purposes

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: 5.25E+06 kg/day after RMM	
Substance Use	600 ktons/year	
On-site risk management measures	93.57 % 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)	0.001	
Typical release to water after RMM	6.83E-02 mg/l	



4. Exposure scenario 4: Formulation of xylenes

4.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Formulation of p-xylene; CAS RN106-42-3
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
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4].



General exposures (closed systems) [CS15].	No specific measures identified [E118].
General exposures (closed systems) [CS15]. ; With sample collection [CS56]. With occasional controlled exposure [CS137]	No specific measures identified [E118].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	No specific measures identified [E118].
General exposures (open systems) [CS16]. Batch process [CS55]. ; With sample collection [CS56]. ; With potential for aerosol generation [CS138].	No specific measures identified [E118].
Batch processes at elevated temperatures [CS136].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40]
Process sampling [CS2].	No specific measures identified [E118].
Laboratory activities [CS36].	No specific measures identified [E118]. {
Bulk transfers [CS14].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Mixing operations (open systems) [CS30]. With potential for aerosol generation [CS138].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]
Manual [CS34]. ; Transfer from/pouring from containers [CS22].	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]
Production or preparation of articles by tableting, compression, extrusion or pelletisation [CS100]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]
Drum and small package filling [CS6].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
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]	No specific measures identified [E118].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.



Amounts Used	EU tonnage	70 ktons/year
	Regional tonnage	7 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 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]	
	Estimated substance removal from wastewater via domestic sewage treatment is 94.51%. [STP 3]	
	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].	
	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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
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: 2.16E+04 kg/day after RMM	
Substance Use	7 ktons/year	
On-site risk management measures	93.57 % 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	1.54E-01 mg/l	



5. Exposure scenario 5: Use of xylenes in coatings – Industrial

5.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in coatings of p-xylene;CAS RN106-42-3,
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15
	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 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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].



Contributing Scenarios	Risk Management Measures Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],
General exposures (closed systems) [CS15].	No specific measures identified [E118].
General exposures (closed systems) [CS15]. With sample collection [CS56]. ; Use in contained systems [CS38].	No specific measures identified [E118].
Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing [CS94]	No specific measures identified [E118].
Mixing operations (closed systems) [CS29]. General exposures (closed systems) [CS15].	No specific measures identified [E118].
Film formation - air drying [CS95]	No specific measures identified [E118].
Preparation of material for application [CS96]Mixing operations (open systems) [CS30].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
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 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]



Material transfers [CS3]. Non-dedicated facility [CS82]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Material transfers [CS3]. Dedicated facility [CS81]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Roller, spreader, flow application [CS98]	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]}.
Dipping, immersion and pouring [CS4].	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 [E118].
Material transfers [CS3]. Drum/batch transfers [CS8]. ; Transfer from/pouring from containers [CS22].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Production or preparation of articles by tableting, compression, extrusion or pelletisation [CS100]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [E118].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	70 ktons/year	
	Regional tonnage	7 ktons/year	
	Fraction of main local source	3.00E-01	
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	0.098	
	Release fraction to waste water from process	0.007	
	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 emissions to provide a typical removal efficiency of >90%. [TCR 7]		
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes	
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: 2.57E+04kg/day after RMM



Substance Use	7 ktons/year	
On-site risk management measures	93.57 % 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	1.57E-01 mg/l	



6. Exposure scenario 6: Use of xylenes in coatings – Professional

6.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in coatings of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19
	Environmental Release Categories: ERC 8A, ERC 8D
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 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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off



	any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],
General exposures (closed systems) [CS15].	No specific measures identified [E18].
Filling / preparation of equipment from drums or containers. [CS45].	No specific measures identified [E18].
General exposures (closed systems) [CS15]. Use in contained systems [CS38].	No specific measures identified [E18].
Preparation of material for application [CS96]	No specific measures identified [E18].
Film formation - air drying [CS95] Outdoor [OC9].	Ensure operation is undertaken outdoors [E69].
Film formation - air drying [CS95] Indoor [OC8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
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].
Preparation of material for application [CS96] Outdoor [OC9].	Avoid carrying out operation for more than 4 hours [OC12].
Material transfers [CS3]. Drum/batch transfers [CS8]. Dedicated facility	Provide a good standard of general ventilation. Natural ventilation is from windows and doors etc. Controlled ventilation means air is supplied or removed by a powered fan. [E1].
Material transfers [CS3]. Drum/batch transfers [CS8]. Non Dedicated facility	Use drum pumps or carefully pour from container [E64]. Use container to collect drips [E73]
Roller, spreader, flow application [CS98] Indoor [OC8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
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 or extracted enclosure [E57]. Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Manual [CS34]. Spraying [CS10]. ; Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Dipping, immersion and pouring [CS4]. Indoor [OC8].	Provide extract ventilation to points where emissions occur [E54].
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].	No specific measures identified [E18].
Hand application - fingerpaints, pastels, adhesives [CS72] Indoor [OC8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].



Hand application - fingerprints, pastels, adhesives [CS72] Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Avoid carrying out operation for more than 4 hours [OC12].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [E18]

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	70 ktons/year	
	Regional tonnage	7 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	0.98	
	Release fraction to waste water from process	0.01	
	Release fraction to soil from process (regional only)	0.01	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Negligible air emissions as process operates in a contained system.		
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.	

Values for Scaling Purposes		
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	
	Msafe: 2.11 kg/day after RMM	
Substance Use	14 ktons/year	
On-site risk management measures	93.57 % 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	5.28E-03 mg/l	



7. Exposure scenario 7: Use of xylene 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
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		1052Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 100% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 13800g [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 m3 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 cm ² [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 3% [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 cm ² [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 24% [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 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 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]; covers skin contact area up to 35.73 cm2 [ConsOC5]; 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)--	OC	Unless otherwise stated, covers concentrations up to 15% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1



Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)		time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm ² [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m ³ [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 1.5% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m ³ [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 27.5% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m ³ [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 50% [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 (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 50% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 85g [ConsOC2]; covers use in room size of 20m ³ [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 1.9% [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 857.50 cm ² [ConsOC5]; for each use event, covers use amounts up to 13800g [ConsOC2]; covers use in room size of 20m ³ [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--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 cm ² [ConsOC5]; for each use event, assumes swallowed amount of 1g [ConsOC13]; covers use in room size of 20m ³ [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 8% [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 cm ² [ConsOC5]; for each use event, assumes swallowed amount of 1.35g [ConsOC13]; covers use in room size of 20m ³ [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 1.5% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m ³ [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 27.5% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m ³ [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 50% [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 (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 50% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 40g [ConsOC2]; covers use in room size of 20m ³ [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 50% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 56g [ConsOC2]; covers use in room size of 20m ³ [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	OC	Unless otherwise stated, covers concentrations up to 50% [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 cm ²



(furniture, shoes)		[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 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 50% [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 50% [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 50% [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 ESVOG SpERC 8.3c.v1



Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.	
Amounts Used	EU tonnage	70 ktons/year
	Regional tonnage	7 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	Risk from environmental exposure is driven by freshwater [TCR1a]	
	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]	
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 93.57 (%) [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		
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
Guidance how the DU can evaluate whether he operates within the conditions set in the exposure scenario - scaling tools. Standard phrases.		
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 86.5% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
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	
	Msafe: 1.8E+04 kg/day after RMM	
Substance Use	0.014 ktons/year	
On-site risk management measures	93.57 % 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	5.28E-03 mg/l	



8. Exposure scenario 8: Use of xylenes in cleaning – Industrial

8.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in cleaning agents of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC1, 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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
	0
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],



Bulk transfers [CS14].	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].	No specific measures identified [E18].
Automated process with (semi) closed systems [CS93] Use in contained systems [CS38]. ; Drum/batch transfers [CS8]. Use in contained systems [CS38].	No specific measures identified [E18].
Application of cleaning products in closed systems [CS101]	No specific measures identified [E18]
Filling / preparation of equipment from drums or containers. [CS45]. Dedicated facility [CS81]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Use in contained batch processes [CS37]. Treatment by heating [OC129]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Degreasing small objects in cleaning station [CS41].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]
Cleaning with low-pressure washers [CS42].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Cleaning with high pressure washers [CS44].	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]
Manual [CS34]. Surfaces [CS48]. ; Cleaning [CS47]. ; No spraying [CS60].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67] With occasional controlled exposure [CS137]	No specific measures identified [E18].

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 ESVOG SpERC 4.4a.v1		
Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	14 ktons/year	
	Regional tonnage	1.4 ktonnes/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	0.3
	Release fraction to waste water from process	0.00003
	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 emissions to provide a typical removal efficiency of >90%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [STP3]	
	Assumed domestic sewage treatment plant flow 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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
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	
	Msafe: 2.57E+05kg/day after RMM	
Substance Use	1.4 ktons/year	
On-site risk management measures	93.57 % 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	4.51E-03 mg/l	



9. Exposure scenario 9: Use of xylenes in cleaning – Professional

9.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in cleaning agents of p-xylene; CAS RN106-42-3
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
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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
	0
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4].
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].	No specific measures identified [E18].
Automated process with (semi) closed systems [CS93] Use in contained systems [CS38]. ; Drum/batch transfers [CS8].	No specific measures identified [E18].
Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products) [CS76]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Filling / preparation of equipment from drums or containers. [CS45]. Outdoor [OC9].	Ensure operation is undertaken outdoors [E69]. Avoid carrying out operation for more than 4 hours [OC12].
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].
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 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]. Outdoor [OC9].	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 a good standard of general ventilation. Natural ventilation is from windows and doors etc. Controlled ventilation means air is supplied or removed by a powered fan. [E1]. Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Ad hoc manual application via trigger sprays, dipping, etc. [CS27]. Rolling, Brushing [CS51].	Provide extract ventilation to points where emissions occur [E54].
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].Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Application of cleaning products in closed systems [CS101] Outdoor [OC9].	Ensure operation is undertaken outdoors [E69].
Cleaning of medical devices [CS74]	Provide extract ventilation to points where emissions occur [E54].
Equipment cleaning and maintenance [CS39].	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [E18].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.	
Amounts Used	EU tonnage	14 ktons/year
	Regional tonnage	1.4 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 8.4b.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.02
	Release fraction to waste water from process	0.000001
	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	Negligible air emissions as process operates in a contained system.	
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant

Values for Scaling Purposes		
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	
	Msafe: 470kg/day after RMM	
Substance Use	1.4 ktons/year	
On-site risk management measures	93.57 % 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	4.08E-03 mg/l	



10. Exposure scenario 10: Use of xylenes 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 (excipient only), 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		
Specific Environmental Release Category		
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		1052Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 100% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 13800g [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 20m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 0.48g [ConsOC2]; covers use in room size of 20m ³ [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 (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 2000g [ConsOC2]; Covers use in a one car garage (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 4g [ConsOC2]; Covers use in a one car garage (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m ³ [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	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 cm ² [ConsOC5]; for each use event, covers use



products, glass cleaners)		amounts up to 35g [ConsOC2]; covers use in room size of 20m ³ [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 1.5% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m ³ [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 12% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m ³ [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% [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 (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 18% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 85g [ConsOC2]; covers use in room size of 20m ³ [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 0.6% [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 857.50 cm ² [ConsOC5]; for each use event, covers use amounts up to 13800g [ConsOC2]; covers use in room size of 20m ³ [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--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 cm ² [ConsOC5]; for each use event, assumes swallowed amount of 1g [ConsOC13]; covers use in room size of 20m ³ [ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC9c:Finger paints --Finger paints	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 254.40 cm ² [ConsOC5]; for each use event, assumes swallowed amount of 1.35g [ConsOC13]; covers use in room size of 20m ³ [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 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 cm ² [ConsOC5]; for each use event, covers use amounts up to 2200g [ConsOC2]; Covers use in a one car garage (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 34g [ConsOC2]; Covers use in a one car garage (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [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 7.4% [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 73g [ConsOC2]; covers use in room size of 20m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m ³ [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 cm ² [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m ³ [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	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



purpose cleaners, sanitary products, glass cleaners)		area up to 428.00 cm ² [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m ³ [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 20m ³ [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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.	
Amounts Used	EU tonnage	14 ktons/year
	Regional tonnage	1.4 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 8.4c.v1) give rise to following releases fractions		
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.95
	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	Risk from environmental exposure is driven by freshwater [TCR1a]	
	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]	
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 93.57 (%) [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
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Section 3		Exposure Estimation ('Flexible' heading)
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 ('Flexible' heading)
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 86.5% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes		
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: Soils	
	Msafe: 410kg/day after RMM	
Substance Use	1.4 ktons/year	
On-site risk management measures	93.57 % 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

4.68E-03 mg/l



11. Exposure scenario 11: Use of xylenes in oil field drilling and production operations – Industrial

11.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in oil field drilling and production operations of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3)
	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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
	0
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4].
Bulk transfers [CS14].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].



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].
Drill floor operations [CS116].	No specific measures identified [E18].
Drill floor operations [CS116].	Ensure operation is undertaken outdoors [E69].
Operation of solids filtering equipment - vapour exposures [CS118].	Ensure material transfers are under containment or extract ventilation [E66].
Operation of solids filtering equipment - aerosol exposures [CS119].	Ensure material transfers are under containment or extract ventilation [E66].
Operation of solids filtering equipment [CS117].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Treatment and disposal of filtered solids [CS121].	No specific measures identified [E18].
Process sampling [CS2].	No specific measures identified [E18].
General exposures (closed systems) [CS15].	No specific measures identified [E18].
Pouring from small containers [CS9].	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].
General exposures (open systems) [CS16].	Ensure operation is undertaken outdoors [E69].
Equipment cleaning and maintenance [CS39].	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].	No specific measures identified [E18].
Batch process [CS55]. With occasional controlled exposure [CS137]	Provide extract ventilation to points where emissions occur [E54].

Section 2.2		Control of environmental exposure	
Assessment method	Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.		
Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
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	Discharge to aquatic environment is restricted (see Section 4.2)	0.01	



discharges, air emissions and releases to soil	Prevent environmental discharge consistent with regulatory requirements.	0.07
Organisation measures to prevent/limit release from site	Not applicable	0
Conditions and measures related to municipal sewage treatment plant		
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	
	Not applicable	
	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	Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.
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	Discharge to aquatic environment is restricted by law and industry prohibits release. ¹ ¹ OSPAR Commission 2009. Discharges, Spills and Emissions from Offshore Oil and Gas Installations in 2007, including the assessment of data reported in 2006 and 2007.

Values for Scaling Purposes



Further details on scaling and control technologies are provided in SpERC factsheet http://cefic.org/en/reach-for-industries-libraries.html). [DSU4]		
Substance Use	2.1 ktons/year	
On-site risk management measures	Not applicable	
Dilution factors	Freshwater	Not applicable
	Marine water	Not applicable
Initial release percent at site to water	Not applicable	
Typical release to water after RMM	Not applicable	



12. Exposure scenario 12: Use of xylenes in oil field drilling and production operations – Professional

12.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in oil field drilling and production operations of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8A, PROC8B
	Environmental Release Categories: ERC 8D
Processes, tasks, activities covered	Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, maintenance 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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4].
Bulk transfers [CS14].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
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].
Drill floor operations [CS116].	No specific measures identified [E18].



Drill floor operations [CS116].	Ensure operation is undertaken outdoors [E69].
Operation of solids filtering equipment - vapour exposures [CS118].; Operation of solids filtering equipment - aerosol exposures [CS119].; Operation of solids filtering equipment [CS117].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Treatment and disposal of filtered solids [CS121].	No specific measures identified [E118].
Process sampling [CS2].	No specific measures identified [E118].
General exposures (closed systems) [CS15].	No specific measures identified [E118].
Pouring from small containers [CS9].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. Avoid carrying out operation for more than 4 hours [OC12].
General exposures (open systems) [CS16].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Equipment cleaning and maintenance [CS39].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. Avoid carrying out operation for more than 4 hours [OC12].
Batch process [CS55].	No specific measures identified [E118].
Batch process [CS55]. With occasional controlled exposure [CS137]	No specific measures identified [E118].

Section 2.2		Control of environmental exposure	
Assessment method	Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.		
Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
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	Prevent environmental discharge consistent with regulatory requirements.		



release from site	
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
	Not applicable
	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	Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.
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	Discharge to aquatic environment is restricted by law and industry prohibits release. ¹ ¹ OSPAR Commission 2009. Discharges, Spills and Emissions from Offshore Oil and Gas Installations in 2007, including the assessment of data reported in 2006 and 2007.

Values for Scaling Purposes	
Further details on scaling and control technologies are provided in SpERC factsheet http://cefic.org/en/reach-for-industries-libraries.html . [DSU4]	
Substance Use	21 ktons/year
On-site risk management measures	Not applicable



Dilution factors	Freshwater	Not applicable
	Marine water	Not applicable
Initial release percent at site to water	Not applicable	
Typical release to water after RMM	Not applicable	



13. Exposure scenario 13: Use of xylenes in binders – Industrial

13.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in binders and release agents of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC6, PROC7, PROC8b, PROC10, PROC13, PROC14
	Environmental Release Categories: ERC 4
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 > 20°C above ambient, unless otherwise stated [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4].
Material transfers [CS3].	No specific measures identified [E118].



Material transfers [CS3]. With occasional controlled exposure [CS137]	No specific measures identified [E18].
Material transfers [CS3]. Batch process [CS55]. ; (closed systems) [CS107].	No specific measures identified [E18].
Drum/batch transfers [CS8].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Mixing operations (closed systems) [CS29].	No specific measures identified [E18].
Mixing operations (open systems) [CS30].	No specific measures identified [E18].
Mold forming [CS31].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Casting operations [CS32].	Provide extract ventilation to points where emissions occur [E54].
Spraying [CS10]. ; Machine [CS33].	Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60]. Wear suitable gloves tested to EN374 [PPE15].
Manual roller application or brushing [CS13].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [E18].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	21 ktons/year	
	Regional tonnage	2.1 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	
Conditions given in SPERC fact sheet (ESVOC SpERC 4.10a.v1) give rise to following releases fractions			
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.2	
	Release fraction to waste water from process	0.00003	
	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 emissions to provide a typical removal efficiency of >80%. [TCR 7]
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

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	
	Msafe: 3.70E+05 kg/day after RMM	
Substance Use	2.1 ktons/year	
On-site risk management measures	93.57 % 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	4.73E-03 mg/l	



14. Exposure scenario 14: Use of xylenes in binders –Professional

14.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use as mould release and binder of p-xylene; CAS RN106-42-3
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
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 > 20°C above ambient, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4].
Material transfers [CS3]. ; (closed systems) [CS107]	No specific measures identified [E18].



Material transfers [CS3]. ; (closed systems) [CS107]With occasional controlled exposure [CS137]	No specific measures identified [E18].
Material transfers [CS3]. ; (closed systems) [CS107] Batch process [CS55].	No specific measures identified [E18].
Drum/batch transfers [CS8].	Transfer materials directly to mixing vessels [E45]
Mixing operations (closed systems) [CS29].	No specific measures identified [E18].
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].
Casting operations [CS32]. ; (open systems) [CS108]	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]. ; Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
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].	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]
Storage [CS67]	No specific measures identified [E18].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [E18].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	21 ktons/year	
	Regional tonnage	2.1 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 8.10b.v1) give rise to following releases fractions			
Other Operational Conditions of	Release fraction to air from process	0.95	



use affecting environmental exposure	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	Negligible air emissions as process operates in a contained system.	
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

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	
	Msafe: 5.78E+02 kg/day after RMM	
Substance Use	2.1 ktons/year	
On-site risk management measures	93.57 % 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		4.98E-03 mg/l



15. Exposure scenario 15: Use of xylenes in agrochemicals – Professional

15.1. Exposure scenario

Section 1		Exposure Scenario Title
Title	Use in agrochemicals of p-xylene; CAS RN106-42-3	
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 storage, 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 > 20°C above ambient, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].	
Contributing Scenarios		Risk Management Measures
		Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	<p>Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3]</p> <p>Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],</p>	



Transfer from/pouring from containers [CS22].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. Avoid carrying out operation for more than 1 hour [OC11]
Mixing in containers [CS23].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Spraying/fogging by manual application [CS24].	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]
Spraying/fogging by machine application [CS25].	Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 [E70].
Ad hoc manual application via trigger sprays, dipping, etc. [CS27].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Clean down and maintenance [CS26]. Non-dedicated facility [CS82].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Disposal of wastes [CS28]. Non-dedicated facility [CS82].	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Storage [CS67] With occasional controlled exposure [CS137]	No specific measures identified [E118].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	21 kt/yr	
	Regional tonnage	2.1 kt/yr	
	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 8.11a.v1) give rise to following releases fractions			
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.9	
	Release fraction to waste water from process	0.01	
	Release fraction to soil from process (regional only)	0.09	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Negligible air emissions as process operates in a contained system.		
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [TCR 11]		
	Soil emission controls are not applicable as there is no direct release to soil. [TCR 4]		
Organisation measures to	Prevent environmental discharge consistent with regulatory requirements. [OMS 4]		



prevent/limit release from site	
Conditions and measures related to municipal sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment is 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes	
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
	Msafe: 6.50E+02 kg/day after RMM
Substance Use	2.1 ktons/year



On-site risk management measures	93.57 % 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	4.44E-03 mg/l	



16. Exposure scenario 16: Use of xylenes in agrochemicals – Consumer

16.1 Exposure scenario

Section 1		Exposure Scenario Title
Title		Agrochemicals
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC12, PC27
Processes, tasks, activities covered		Covers the consumer use in agrochemicals in liquid and solid forms.
Environmental Release Category		ERC8A, ERC8D
Specific Environmental Release Category		
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		1052Pa
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 40% [ConsOC1]
Amounts used		Unless otherwise stated, covers use amounts up to 0.4g [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 40% [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 cm ² [ConsOC5]; for each use event, assumes swallowed amount of 0.3g [ConsOC13]; covers use in room size of 20m ³ [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 40% [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 cm ² [ConsOC5]; for each use event, assumes swallowed amount of 0.3g [ConsOC13]; covers use in room size of 20m ³ [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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	21 ktonnes/year	
	Regional tonnage	2.1 ktonnes/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 8.11b.v1) give rise to following releases fractions			
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.9	
	Release fraction to waste water from process	0.01	
	Release fraction to soil from process (regional only)	0.09	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater [TCR1a]		
	Treat air emission to provide a typical removal efficiency of 0% [TCR 7]		
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 93.57 (%) [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		

Values for Scaling Purposes

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
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	Msafe: 6.50E+02 kg/day after RMM	
Substance Use	21 ktons/year	
On-site risk management measures	93.57 % 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	4.44E-03 mg/l	

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 86.5% which would be typically found in waste-water treatment plant.



17. Exposure scenario 17: Use of xylenes in fuels – Industrial

17.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in Fuels of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC1, PROC2, PROC3, 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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4].
Bulk transfers [CS14].	No specific measures identified [E18].



Drum/batch transfers [CS8].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
General exposures (closed systems) [CS15].	No specific measures identified [E18]. {Wear suitable gloves tested to EN374 [PPE15]}.
General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	No specific measures identified [E18].
General exposures (closed systems) [CS15]. Batch process [CS55].	No specific measures identified [E18].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]	No specific measures identified [E18].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]Batch process [CS55].	No specific measures identified [E18].
Equipment maintenance [CS5].	Drain down and flush system prior to equipment break-in or maintenance [E55].Wear suitable coveralls to prevent exposure to the skin [PPE27].
Vessel and container cleaning [CS103]	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Storage [CS67]	Transfer via enclosed lines [E52].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 7.12a.v1		
Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	70 ktons/year	
	Regional tonnage	7 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	0.0025	
	Release fraction to waste water from process	0.00001	



	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 emissions to provide a typical removal efficiency of >80%. [TCR 7]	
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.



Values for Scaling Purposes

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	
	Msafe: 1.22E+06 kg/day after RMM	
Substance Use	70 ktons/year	
On-site risk management measures	93.57 % 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	4.81E-03 mg/l	



18. Exposure scenario 18: Use of xylenes in fuels – Professional

18.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in Fuels of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Professional (SU22)
	Process Categories: PROC1, PROC2, PROC3, 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 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
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],
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].



Dipping, immersion and pouring [CS4].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
General exposures (closed systems) [CS15].	No specific measures identified [E118].
General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	No specific measures identified [E118].
General exposures (open systems) [CS16]. ; (closed systems) [CS107] Batch process [CS55].	No specific measures identified [E118].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]	No specific measures identified [E118].
Equipment cleaning and maintenance [CS39].	Drain down and flush system prior to equipment break-in or maintenance [E55].
Vessel and container cleaning [CS103]	Drain down system prior to equipment break-in or maintenance [E65].
Storage [CS67]	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 9.12b.v1		
Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	70 ktons/year	
	Regional tonnage	7 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 9.12b.v1) give rise to following releases fractions			
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.001	
	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 93.57%. [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	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 93.57 (%) [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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes	
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
	Msafe: 2.35E+03 kg/day after RMM
Substance Use	0.014 ktons/year



On-site risk management measures	93.57 % 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	4.08E-03 mg/l	



19. Exposure scenario 19: Use of xylenes in fuels – Consumer

19.1. Exposure scenario

Section 1		Exposure Scenario Title
Title		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		ERC9A, ERC9B
Specific Environmental Release Category		
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		1052Pa
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 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 cm ² [ConsOC5]; for each use event, covers use amounts up to 37500g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m ³ [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 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 cm ² [ConsOC5]; for each use event, covers use amounts up to 3750g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m ³ [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 100% [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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	70 ktons/year	
	Regional tonnage	7 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 9.12c.v1) give rise to following releases fractions			
Other Operational Conditions of use affecting environmental exposure	Release fraction to air from process	0.001	
	Release fraction to waste water from process	0.00001	
	Release fraction to soil from process (regional only)	0.00001	
Technical onsite conditions and	Treat air emissions 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 93.57%. [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	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 93.57 (%) [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		
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 93.57% which would be typically found in waste-water treatment plant.

Values for Scaling Purposes

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	
	Msafe: 2.35E+03 kg/day after RMM	
Substance Use	0.014 ktons/year	
On-site risk management measures	93.57 % 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	4.08E-03 mg/l	



20. Exposure scenario 20: Use of xylenes in laboratories – Industrial

20.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in laboratory reagents of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC10, PROC15
	Environmental Release Categories: ERC2, ERC 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, unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],
Laboratory activities [CS36]. Small scale [CS61]. Handling small quantities (<1000ml) for more than 4 hours/day - inside fume cupboard.	No specific measures identified [E18].



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 ventilation (not less than 3 to 5 air changes per hour). [E11].
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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 ESVOG SpERC fact sheet		
Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	21 ktons/year	
	Regional tonnage	2.1 ktons/year	
	Fraction of main local source	0.3	
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 give rise to following releases fractions			
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 93.57%. [TCR 11]		
	Soil emission controls are not applicable as there is no direct release to soil. [TCR4]		
Organisation 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 93.57 (%) [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
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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 93.57% which would be typically found in waste-water treatment plant.	

Values for Scaling Purposes		
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: 2.71E+03 kg/day after RMM	
Substance Use	0.63 ktons/year	
On-site risk management measures	93.57 % 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	1.35E-01 mg/l	



21. Exposure scenario 21: Use of xylenes in laboratories – Professional

21.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in laboratory reagents of p-xylene; CAS RN 106-42-3
Use 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
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. [E3] Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release e.g. spraying [E4],
Laboratory activities [CS36]. Small scale [CS61]. ; Fume-cupboard Activity [CS139].	No specific measures identified [E18]. {



Cleaning [CS47]. Rolling, Brushing [CS51]. ;
Vessel and container cleaning [CS103]

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 ESVOC SpERC 8.17.v1		
Product characteristics	The Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	21 ktons/year	
	Regional tonnage	2.1 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 8.17.v1) give rise to following releases fractions			
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]		
	Estimated substance removal from wastewater via domestic sewage treatment 93.57% [STP3]		
	Soil emission controls are not applicable as there is no direct release to soil. [TCR4]		
Organisation 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 93.57 (%) [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	None		



above	
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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 93.57% which would be typically found in waste-water treatment plant.	

Values for Scaling Purposes		
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: 1.09E+02 kg/day after RMM	
Substance Use	0.0042 ktons/year	
On-site risk management measures	93.57 % 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	2.21E-02 mg/l	



22. Exposure scenario 22: Use in rubber production of xylenes

22.1. Exposure scenario

Section 1	Exposure Scenario Title
Title	Use in rubber manufacturing and processing of p-xylene; CAS RN106-42-3
Use Descriptor	Sector of Use: Industrial (SU3, SU10)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC 21
	Environmental Release Categories: ERC1, ERC4, ERC6D
Processes, tasks, activities covered	Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing.
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].
	0
Contributing Scenarios	Risk Management Measures
	Note: list RMM standard phrases according to the control hierarchy indicated in the ECHA template: 1. Technical measures to prevent release, 2. Technical measures to prevent dispersion, 3. Organizational measures, 4. Personal protection. Phrases between brackets are good practice advice only.
Material transfers [CS3]. With occasional controlled exposure [CS137]	No specific measures identified [E118].
Material transfers [CS3]. Dedicated facility [CS81].	Provide a good standar of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Bulk weighing [CS91]	No specific measures identified [E118].



Bulk weighing [CS91]With occasional controlled exposure [CS137]	No specific measures identified [E118].
Small scale weighing [CS90]	Provide a good standar of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Additive premixing [CS92]	No specific measures identified [E118].
Material transfers [CS3]. Dedicated facility [CS81].	Provide a good standar of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Material transfers [CS3].	Provide a good standar of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Additive premixing [CS92] Batch process [CS55].	Provide a good standar of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Calendering (including Banburys) [CS64]	Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Pressing uncured rubber blanks [CS73]	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) [E40].
Vulcanisation [CS70]	Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].
Cooling cured articles [CS71]	Provide a good standar of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Laboratory activities [CS36].	No specific measures identified [E118].
Equipment maintenance [CS5].	Drain or remove substance from equipment prior to break-in or maintenance [E81].

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 Xylene isomers are liquids of medium volatility. Their average water solubility is 158mg/l; their average vapour pressure is 1050Pa at 25°C; and their average log Kow is 3.16. They are considered to be readily biodegradable.		
Amounts Used	EU tonnage	42 ktons/year	
	Regional tonnage	4.2 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 >90%. [TCR 8]	
	Typical onsite wastewater treatment technology provides removal efficiency of 93.57%. [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 93.57 (%) [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 TBD	Exposure Estimation
3.1. Health	Standard phrases. Ability to Include a web link.
3.2. Environment	Standard phrases. Ability to Include a web link.
Section 4 TBD	Guidance to check compliance with the Exposure Scenario
4.1. Health	Standard phrases
4.2. Environment	Standard phrases

Values for Scaling Purposes	
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: 1.76E+04 kg/day after RMM



Substance Use	4.2 ktons/year	
On-site risk management measures	93.57 % 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	1.39E-01 mg/l	



