BAZAN GROUP
GADIV PETOCHEMICAL INDUSTRIES LTD

SAFETY DATA SHEET

ORTHO-XYLENE

Complying with 1907/2006/EEC Regulation of 18 December 2006 ("REACH Regulation"), COMMISSION REGULATION (EU) No 453/2010 and REGULATION (EC) No 1272/2008 (CLP)

Section 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/ UNDERTAKING

1.1 Product identifier

Substance Name: ortho-XYLENE
Trade name: o-XYLENE
Synonyms: o-Dimethylbenzene, 1,2-Dimethylbenzene, o-Methyltoluene, 1,2-Xylene, o-Xylol
Chemical formula: C_8H_{10}
Product type: Aromatic hydrocarbons, mono constituent substance
CAS number: 95-47-6
EC number: 202-422-2
REACH registration no(s): **01-2119485822-30-0023**

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

Intended Use: Substrate / Intermediate for synthesis of polymers, Solvent

Identified Uses:

Manufacture of Substance
Distribution of Substance
Use as an Intermediate
Use in Formulations
Use in Cleaning
Use in Cleaning Agents
Use in Coatings
Use in Oilfield drillings and Production operations
Use in Binders
Use as a Fuel
Use as a Laboratory reagent
Use in Rubber Production
Use in Agrochemicals

Uses advised against: This product is not recommended for any industrial, professional or consumer use other than the Identified Uses above.

1.3 Details of the supplier of the safety data sheet

Company/undertaking identification
Supplier/Manufacturer: GADIV PETROCHEMICAL INDUSTRIES Ltd.
P.O.B 4 HAIFA

Tel: +972-4-8788020
Fax: +972-4-8788018
E-mail: Gadiv@bazan.co.il

E-mail address of person responsible for this SDS: telena@bazan.co.il

1.4 Emergency telephone number

Emergency telephone number (including hours of operation): +972-4-8788512

Section 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification in accordance to Regulation (EC) No. 1272/2008 (CLP/GHS)

Physical / Chemical Hazards:
Flammable Liquid Category 3 H226: Flammable liquid and vapour

Health Hazards:
Acute Toxicity Category 4 H312: Harmful in contact with skin
Acute Toxicity Category 4 H332: Harmful if inhaled
Skin Irritation Category 2 H315: Causes skin irritation

Environmental Hazards:
Not Classified

Classification according to Directive 67/548/EEC (DSD) or 1999/45/EC

R10 Flammable
Xn; R20/21 Harmful by inhalation and in contact with skin. .
Xi; R38 Irritant. Irritating to skin.

2.2 Label elements

Labeling in accordance with Regulation 1272/2008 (CLP)

Hazard pictograms:


Signal word: Danger

Hazard statements:

H226: Flammable liquid and vapour.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H332: Harmful if inhaled.

Precautionary Statements:

P210: Keep away from heat/sparks/open flames/... /hot surfaces.... No smoking.
P243: Take precautionary measures against static discharge.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.
Rinse skin with water/shower.
P332+P313: If skin irritation occurs: Get medical advice/attention.

Labeling in accordance Directive 67/548/EEC (DSD) or 1999/45/EC

Xn – Harmful
Xi – Irritant

Risk phrases

R10: Flammable
R20/21: Harmful by inhalation and in contact with skin

R38: Irritant; Irritating to skin

2.3 Self classification(s)

Name: xylene isomers including p-xylene CLP self classification
Implementation: EU
Remarks: Additional classification for irritation to eyes and respiratory tract plus aspiration hazard
Classification

Physical / Chemical Hazards:
Flammable liquids: Flam. Liquid 3 (Hazard statement: H226: Flammable liquid and vapour.)

Health hazards:
Acute Tox. 4 (Hazard statement: H312: Harmful in contact with skin.)
Acute Tox. 4 (Hazard statement: H332: Harmful if inhaled.)
Skin Irrit. 2 (Hazard statement: H315: Causes skin irritation.)
Eye Irrit. 2 (Hazard statement: H319: Causes serious eye irritation.)
Aspiration hazard: Asp. Tox. 1 (Hazard statement: H304: May be fatal if swallowed and enters airways.)
Specific target organ toxicity - single: STOT Single Exp. 3 (Hazard statement: H335: May cause respiratory irritation.)

Labelling
Signal word: Danger
Hazard pictogram:

Hazard statements:

H226: Flammable liquid and vapour.
H304: May be fatal if swallowed and enters airways.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.

Precautionary statements:
P210: Keep away from heat/sparks/open flames/... /hot surfaces.... No smoking.
P243: Take precautionary measures against static discharge.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.
Rinse skin with water/shower.
P301+P310: IF SWALLOWED: I

2.4 Other hazard

Does not meet the criteria for PBT or vPvB.
This material can accumulate electrical static discharge, and undergo electrical ignition.

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Ingredient name	CAS number	EC number	%	EU Classification	GHS Classification
o-XYLENE **REACH registration no.** **01-2119485822-30-0023**	95-47-6	202-422-2	> 98%	R10 Xn; R20/21 Xi; R38	Flam. Liq. 3 H226 Acute Tox. 4 H312 Acute Tox. 4 H332 Skin Irrit. 2 H315

Additional Information:

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in section 8.
See section 16 for the full text of the H-statements and R-phrases declared above.

Section 4. FIRST AID MEASURES

Product-Specific hazards:
Flammable liquid and vapour.
Harmful in contact with skin and if inhaled.
Causes skin irritation.

Causes eye irritation.
May cause respiratory irritation.
Risk of serious damage to the lungs if swallowed (by subsequent aspiration).

4.1 Description of first aid measures

General advice:
Take care to self-protect by avoiding becoming contaminated.
Use adequate respiratory protection
Move contaminated patient(s) out of the dangerous area.
Take off all contaminated clothing and shoes.
Seek medical assistance - show the safety data sheet or label if possible

Inhalation:
Move to fresh air. Do not leave the victim unattended. Keep patient warm and at rest.
Seek immediate medical attention. If breathing is difficult, give oxygen if possible or assisted ventilation, (do not use mouth to mouth.(If unconscious, place in recovery position. In the event of cardiac arrest (no pulse), apply cardiopulmonary resuscitation.

Skin contact:
Take off all contaminated clothing and shoes. Immediately flush affected area with plenty of soap and water – continue for at least 15 minutes. If there are signs of irritation or other symptoms seek medical attention.

Eyes contact:
Remove any contact lenses. Flush eyes with water thoroughly and continuously for at least 15 minutes. Keep eye wide open while rinsing. Protect unharmed eye. If there are signs of irritation or other symptoms seek medical attention. If eye irritation, pain, swelling, lachrimation or photophobia persists, patient should be referred to a specialist health care facility.

Ingestion:
Do NOT induce vomiting, if vomiting does occur, have victim lean forward to reduce risk of aspiration. Get medical
attention immediately. Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Causes irritation to the skin. This irritation can result in redness and swelling of the skin. Repeat contact with the skin may cause it to become dry and cracked.

Causes eye irritation. This irritation can result in redness and swelling of the eyes.

May cause respiratory irritation. If inhalation occurs, signs and symptoms may include sore throat, headache, nausea, coughing, choking, wheezing, difficulty in breathing, chest

ingestion, shortness of breath and may cause transient central nervous system (CNS) depression.

In case of ingestion, Ipecac-induced emesis is not recommended. Consider use of charcoal as a slurry (240mL water/30 g charcoal). Usual dose: 25 to 100 g in adults.
If determined necessary (and under qualified medical supervision), the stomach should be emptied by gastric lavage with the airway protected by endotracheal intubation

Section 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

LARGE FIRE: Use water spray, water fog or foam. DO NOT use direct water jet.

SMALL FIRE: Dry powder or carbon dioxide (CO2) extinguisher, dry sand or firefighting foam.

Unsuitable Extinguishing Media: Direct water jet.

Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2 Unusual fire hazards arising from the substance or mixture

Extremely flammable. Hazardous material.

Hazardous combustion products:

Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

5.3 Fire Fighting Instructions

Vapour is denser than air – flashback may be possible over considerable distances.

Containers may explode under fire conditions - use water spray to cool unopened containers.

Do not allow run-off from firefighting to enter drains or water courses – may cause explosion hazard in drains and may reignite on surface water.

5.4 Special protective measures for firefighters

Wear an approved positive pressure self-contained breathing apparatus in addition to standard firefighting gear.

Other: All combustion residues and contaminated water from fire-fighting should be disposed of according to local regulations

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 Prevention of secondary risk

Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

6.2 Personal precautions

Wear personal protective equipment. Avoid breathing vapours or mist. Ensure adequate ventilation and absence of sources of ignition. Beware of accumulation of vapours in low areas or contained areas, where explosive concentrations may occur.

6.3 Environmental precautions

Land spillage: Prevent further leakage or spillage if safe to do so. Prevent spillage from entering drains, sewer, basement or confined areas.

Water spillage: Prevent further leakage or spillage if safe to do so. If the spillage contaminates rivers, lakes or drains inform respective authorities.

6.4 Spill cleanup methods

Land spillage: Prevent further leakage or spillage if safe to do so. Prevent spillage from entering drains, sewer, basement or confined areas.

Water spillage: Prevent further leakage or spillage if safe to do so. If the spillage contaminates rivers, lakes or drains inform respective authorities.

Methods for clean up :

Land spillage:

Contain spillage.

Small spillages can be taken up by collection with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and placed in container for disposal according to local / national regulations.

For larger spillages on water contain with booms or barriers, use surface acting agents to thicken spilled materials.

Remove trapped material with suction hoses.

Water spillage:

If the Flash Point exceeds the Ambient Temperature by 10 deg C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10 deg C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

6.5 Further accidental release measures

Spillages of liquid product will create a fire hazard and form an explosive atmosphere.
Ensure all equipment is non sparking or electrically bonded.
Avoid direct contact with released material.
Stay upwind.
Keep non-involved personnel away from the area of spillage.
Ensure adequate ventilation, especially in confined areas

6.6 Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

Section 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Smoking, eating and drinking should be prohibited.
Use only in well ventilated areas.
Avoid all sources of ignition.
Use proper bonding and/or grounding procedures.
This material is a static accumulator: Take precautionary measures against static discharges.
Avoid contact with heat and ignition sources and oxidizing agents.
Containers should be opened only under exhaust ventilation hood.
Do not allow splash filling of bulk volumes.
Do not use compressed air for filling, discharging or handling.
Cleaning, inspection and maintenance of the internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.

Handle empty containers with care; vapour residue may be flammable.
Do not pressurise, cut, weld, braze, solder, drill, or grind on containers.
Dispose of rinse water in accordance with local and national regulations.
The vapour is heavier than air, beware of accumulation in pits and confined spaces.
The product will float on water and can be reignited on surface water.
Ensure that all relevant regulations regarding explosive atmospheres, and handling and storage facilities of flammable products are followed.

7.2 Precautions for safe storage

No smoking.
Store in either mild steel or stainless steel containers or vessels.
Store in a designated cool and well-ventilated place.
Store in the original, tightly closed, container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep container tightly closed and properly labelled.
Vapour space above stored liquid may be flammable/explosive unless blanketed with inert gas.
Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills.
Fixed storage containers, transfer containers and associated equipment should be earthed and bonded to prevent accumulation of static charge.

7.3 Specific end use(s):

Section 8: EXPOSURE CONTROL / PERSONAL PROTECTION

Use process enclosures, local exhaust ventilation, or others engineering controls to keep airborne levels below recommend exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Occupational Exposure Limits:

Ingredient name	Occupational exposure limits
o-Xylene	TLV-ACGIH 100 ppm (TWA), 150 ppm (STEL) OSHA-PEL 100 ppm (TWA) MAK-GER 440 mg/m^3 (TWA) REL-NIOSH 100 ppm (TWA), 150 ppm (STEL)

Deraived effects levels:

Recommended occupational and consumer exposure limit values (following from the performed CSA):

Derived No Effect Level (DNEL)

Exposure pattern	Route	Workers	General population
Short-term – systemic effects	Oral	Not Required	No Hazard
Short-term – systemic effects	Dermal	No Hazard	No Hazard
Short-term – systemic effects	Inhalation	442 mg/m³	260 mg/m³
Long-term – systemic effects	Oral	Not Required	12.5 mg/kg bw/d
Long-term – systemic effects	Dermal	3182 mg/kg bw/d	1872 mg/kg bw/d
Long-term – systemic effects	Inhalation	221 mg/m³	65.3 mg/m³

Predicted No Effect Concentration (PNEC)

Ingredient Name	Exposure Route	Value	Remarks
o-Xylene	Water	0.25 mg/l	None
	Sediment	14.33 mg/Kg	None
	Soil	2.41 mg/Kg	None
	Sewage Treatment Plant	5 mg/l	None

8.2 Exposure controls

Engineering Controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

Person Protective measures

Respiratory protection: In case of risk of exposure exceeding the mean exposure value, an appropriate breathing apparatus must be worn by each individual.
When using a mask or half-mask: Check with respiratory protective equipment suppliers to select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours (boiling point above 65 ^{0}C).
Be aware that filter protection time is limited.

Respiratory hazard monitoring method: Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required periodically to confirm the compliance with state and local legislation.

Eye protection: Wear protective safety goggles.

Skin protection

Hand protection: Use appropriate chemically compatible gloves.
Suitability and durability of gloves are dependent on duration of contact, chemical resistance of the glove material, glove thickness. For more precise details about the choice of appropriate protective gloves, please contact the manufacturer. Contaminated gloves should be replaced.

Skin and body (other than the hands): Wear appropriate protective clothing. Wear boots. Wear face protection.

Hygienic work practices: Do not eat, drink or smoke whilst handling the product. Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls:

Do not allow material to contaminate ground water system.
Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Molecular weight (average):	106.165
Appearance:	Liquid, colourless
Odour:	Aromatic hydrocarbon
Odour threshold:	Not available
pH:	Not available
Melting point/Freezing point:	-20 °C
Boiling range (ASTM D 850):	143-145 °C.
Flash point (Closed Cup):	32 °C
Evaporation rate:	Not available
Flammability (solid, gas):	1.1-7.0 % v/v
Vapor pressure:	1052 at 25°C

Vapor density (air=1):	3.7
Auto-ignition temperature:	463°C to 528 °C
Decomposition temperature:	Not available
Oxidizing properties:	Not applicable
Explosive hazard:	Not applicable
Water Solubility:	157.5 mg/l at 25°C
Partition coefficient Octanol/Water:	3.16
Density:	Typical: 0.884 g/cm3 at 15°C
Viscosity:	0.58 to 0.76 mPa s at 25°C
Surface tension:	Not available

Section 10: STABILITY AND REACTIVITY

10.1 Stability

The product is stable at normal storage, handling and use temperatures.

10.2 Conditions to avoid

Heat, sparks, ignition points, flames, static electricity.

10.3 Materials to avoid

Keep away from strong oxidizing agents.

10.4 Hazardous Decomposition products

Incomplete combustion and thermolysis produce potentially toxic gases such as: carbon monoxide, carbon dioxide, hydrocarbons, aldehyde and soot.

10.5 Hazard polymerization:

Will not happen.

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Product / ingredient name	Test	Dose
Xylenes	LD50, Oral LC50, Inhalation LD50, Dermal	3,523 mg/kg bw (rat) 27,124 mg/m^3 (rat vapors, 4h) 12,126 mg/kg (rabbit)

Skin irritation or corrosion: irritating

Eye irritation: irritating

Respiratory irritation: irritating

Skin sensitization: Not sensitizing

CMR Effects:

Mutagenicity: Genetic toxicity: negative

Carcinogenicity:

No classification of mixed xylenes streams for carcinogenicity is warranted under DPD or GHS/CLP

Reproductive toxicity: Mixed xylenes, xylene isomers and ethylbenzene do not warrant classification for reproductive or developmental toxicity according to DPD or CLP.

Inhalation - Repeated dose toxicity: Low sub-chronic inhalation toxicity

Chronic/Other Effects:

Repeated exposure to similar hydrocarbons affects the central nervous system. Effects were seen only at high doses. Repeated contact may cause de-fatting of the skin, which may cause dermatitis.

Section 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Acute Toxicity

Fish: LC50 2.6 - 11.23 mg/l
Aquatic invertebrates: EC50 is >3.4 mg/l
Algae/aquatic plants: 72 hour EC50 of 2.2 – 4.9 mg/l
Chronic Toxicity

Fish: NOEC (56 d): > 1.3 mg/L (based on test data)
Aquatic invertebrates: 7 day NOEC of 1.17-1.57 mg/l

12.2 Persistence and Degradability

Biotic - Readily biodegradable.
Abiotic - Will not undergo hydrolysis as a function of pH. Will not undergo photolysis.
Expected to rapidly degrade by indirect photolysis in air.
Degradation products: Identification of degradation products – Not available.

12.3 Bioaccumulative potential

The substance is considered as a not bioaccumulative or persistent.

12.4 Mobility in soil

Adsorption/desorption – Not expected to adsorb to soil or sediment due to the low log Kow < 3.

12.5 Results of PBT and vPvB assessment

Does not meet the criteria and hence is not considered to be PBT or vPvB.

12.6 Other adverse effects

No information available

Section 13: DISPOSAL CONSIDERATIONS

13.1 Waste disposal

Prevent from entering sewers or the immediate environment.
Waste must be disposed in compliance with the prevailing regulations.

Relevant disposal method: The only method authorized is collection by an authorized waste contractor and regeneration or incineration in an approved installation.

13.2 Disposal of contaminated packaging

Relevant disposal method: Empty packaging may contain flammable or explosive vapours.
Hand over to an authorized contractor. Proceed in compliance with the prevailing regulations.

Section 14: TRANSPORT INFORMATION

14.1 Land Transportation (ADR/RID)

UN number:	1307
Proper shipping name:	XYLENES
Hazard class:	3
Packing group:	III
ADR/RID-Labels:	3
Hazchem code:	3YE
Hazard identification number:	30
Classification code:	F1

14.2 Inland Waterway Transport (ADN(R))

UN number: 1307
Proper shipping name: XYLENES
Hazard class: 3
Packing group: III
Hazard labels: 3 (N2)

14.3 Marine Transport (IMDG)

UN number: 1307
Proper shipping name: XYLENES
Chemical name: XYLENE
Hazard class: 3
Packing group: III
EmS number: F-E, S-D
Labels: 3
Environmental Hazard: No

14.4 Air Transport (ICAO/IATA)

UN number: 1307
Proper shipping name: XYLENES
Chemical name: XYLENE
Hazard class: 3
Packing group: III
Labels: 3

Section 15: REGULATORY INFORMATION

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

EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.
EU Regulation (EC) No.1907/2006 (REACH)
EU Regulation (EC) No 1272/2008 (CLP)
COMMISSION REGULATION (EU) No 453/2010

15.2 Chemical safety assessment

In accordance with REACH article 14, a Chemical Safety Assessment has been carried out for this substance.

Section 16: OTHER INFORMATION

Full text of R-phrases referred to in sections 2 and 3:

R10 - flammable
R20/21 - harmful by inhalation and in contact with skin
R38 - irritating to skin

S-phrases:
S2 - keep out of the reach of children
S25 - avoid contact with eyes.

Hazard statements:

H226: Flammable liquid and vapour.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H332: Harmful if inhaled.

Precautionary Statements:

P210: Keep away from heat/sparks/open flames/... /hot surfaces.... No smoking.
P243: Take precautionary measures against static discharge.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.
Rinse skin with water/shower.
P332+P313: If skin irritation occurs: Get medical advice/attention.

Training advice: Before using/handling the product one must read carefully present MSDS.

Recommended restriction: N/A

Key Legend Information:

ACGIH- American Conference of Governmental Industrial Hygienists
OSHA- Occupational Safety and Health Administration
NTP- National Toxicology program
IARC- International Agency for Research on Cancer
ND- Not Determined
N/A- Not available
R-phrases- Risk phrases
S-phrases- Safety phrases
H-statements – Hazard statements

P-statements – Precautionary statements
UVCB - Substances of Unknown or Variable composition, Complex reaction products or Biological materials

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To the best of our knowledge the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

EXPOSURE SCENARIO

Manufacture of Substance – Industrial

Section 1	**Exposure Scenario Title**
Title	**Manufacture of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
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 / minimise 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 [EI18].
General exposures (closed systems) [CS15]. With sample collection [CS56]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	No specific measures identified [EI18].
General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56].	No specific measures identified [EI18].
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 [EI18].
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 [EI18].

Section 2.2	Control of environmental exposure	
Assessment method	EUSES 2.1.1 using default relase fractions from SpERC fact sheet (See Appendix D)	
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 ktonnes/year
	Regional tonnage	600 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	40
	Local marine water dilution factor	100
Conditions given in SpERC fact sheet (See Appendix D) 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 >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 93.57 (%) [STP3]	
	Assumed domestic sewage treatment plant flow 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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 Treatement Plant
	Msafe 6.4E+06 kg/day after RMM
Substance Use	600 ktonnes/year
On-site risk management measures	93.57 % efficiency water, 90 % efficiency air

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/ll

Section 5	Additional good practice advice beyond the REACH
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of	
	Control of Worker Exposure
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and
	Control of environmental exposure
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS,

functionality of the available e-SDS system.

Use as an intermediate – Industrial

Section 2.2	Control of environmental exposure	
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	357 ktonnes/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 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	This substance is consumed during use and no waste of the substance is generated.. [ETW 5]	

Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated. [EWR 3]
Other environmental control measures additional to above	None

Section 3	**Exposure Estimation**
3.1. Health	*Not applicable*
3.2. Environment	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, 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	*Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 80 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Distribution of xylenes– Industrial

Section 1	**Exposure Scenario Title**
Title	**Distribution of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. ; With sample collection [CS56]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	No specific measures identified [EI18].
General exposures (open systems) [CS16]. Batch process [CS55]. ; With sample collection [CS56].	No specific measures identified [EI18].
Process sampling [CS2].	No specific measures identified [EI18].
Laboratory activities [CS36].	No specific measures identified [EI18].
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 [EI18].

Section 2.2	Control of environmental exposure

Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	600 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 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 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.[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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 90 % efficiency air	
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

Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Formulation of Substances and Mixtures – Industrial

Section 1	**Exposure Scenario Title**
Title	**Formulation of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
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 / minimise 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 [EI18].
General exposures (closed systems) [CS15]. ; With sample collection [CS56]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].	No specific measures identified [EI18].
General exposures (open systems) [CS16]. Batch process [CS55]. ; With sample collection [CS56]. ; With potential for aerosol generation [CS138].	No specific measures identified [EI18].
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 [EI18].
Laboratory activities [CS36].	No specific measures identified [EI18]. {
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 or articles by tabletting, 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 [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	7 ktonnes/year
	Fraction of main local source	1
Frequency and duration of use	Emission days per year	300
Environmental Factors not influenced by	Local Freshwater dilution factor	10
risk management	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 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.[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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in coatings – Industrial

Section 1	**Exposure Scenario Title**
Title	**Use in coatings of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
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 / minimise 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 [EI18].
General exposures (closed systems) [CS15]. With sample collection [CS56]. ; Use in contained systems [CS38].	No specific measures identified [EI18].
Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing [CS94]	No specific measures identified [EI18].
Mixing operations (closed systems) [CS29]. General exposures (closed systems) [CS15].	No specific measures identified [EI18].

Film formation - air drying [CS95]	No specific measures identified [EI18].
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 [EI18].
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 or articles by tabletting, 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 [EI18].

Section 2.2	**Control of environmental exposure**
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	7 ktonnes/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 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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.

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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 90 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in coatings – Professional

Section 1	Exposure Scenario Title
Title	**Use in coatings of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
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 / minimise 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 [EI18].
Filling / preparation of equipment from drums or containers. [CS45].	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. Use in contained systems [CS38].	No specific measures identified [EI18].
Preparation of material for application [CS96]	No specific measures identified [EI18].
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 [EI18].
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 - fingerpaints, 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 [EI18

Section 2.2	**Control of environmental exposure**	
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	7 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 8.3b.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 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	Not applicable	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of

the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylene in coatings – Consumer

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**
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 to13800g [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 cm2 [ConsOC5]; for each use event, covers use amounts up to 9g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC1:Adhesives, sealants--Glues DIY-use (carpet glue, tile glue, wood parquet glue)	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 6390g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 6.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Glue from spray	OC	Unless otherwise stated, covers concentrations up to 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 typcial 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 typcial 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 typcial ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Laundry and dish washing products	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	OC	Unless otherwise stated, covers concentrations up to 15% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 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 (34m3) under typcial ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC9a:Coatings and paints, fillers putties, thinners--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Fillers and putty	OC	Unless otherwise stated, covers concentrations up to 2% [ConsOC1]; covers use up to 12 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 85g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Plasters and floor equalizers	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 13800g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Modelling clay	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 254.40 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9c:Finger paints --Finger paints	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1.35g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.03hr/event[ConsOC14];

	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC15_n: Non-metal surface treatment products--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 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 (34m3) under typcial ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC18_n: Ink and toners--Inks and toners.	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 71.40 cm2 [ConsOC5]; for each use event, covers use amounts up to 40g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC23_n: Leather tanning, dye, finishing, impregnation and care products--Polishes, wax / cream (floor, furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 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 56g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.23hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC23_n: Leather tanning, dye, finishing, impregnation and care products--Polishes, spray (furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 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 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 typcial 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	EUSES 2.1.1 using default relase fractions from ESVOC 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 ktonnes/year
	Regional tonnage	7 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 8.3c.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 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 [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) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are
		expected to be less than 1 as indicated in Appendix A.
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		Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment		
Environment sub-headings		Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in cleaning – Industrial

Section 1	**Exposure Scenario Title**
Title	**Use in cleaning agents of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18].
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 [EI18].
Application of cleaning products in closed systems [CS101]	No specific measures identified [EI18]
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 [EI18].

Section 2.2	Control of environmental exposure	
Assessment method	EUSES 2.1.1 using default relase fractions from ESVOC 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 ktonnes/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 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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 70 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in cleaning – Professional

Section 1	**Exposure Scenario Title**
Title	**Use in cleaning agents of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18].
Automated process with (semi) closed systems [CS93]Use in contained systems [CS38]. ; Drum/batch transfers [CS8].	No specific measures identified [EI18].
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 [EI18].

Section 2.2	**Control of environmental exposure**
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	1.4 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 8.4b.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 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	Not applicable

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in cleaning – Consumer

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**
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 to13800g [ConsOC2]; covers skin contact area up to 857.5cm2 [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 m3 room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
Section 2.1.1		Product categories

PC3:Air care products--Air care, instant action (aerosol sprays)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 4 times/day of use[ConsOC4]; for each use event, covers use amounts up to 0.1g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC3:Air care products--Air care, continuous action (solid and liquid)	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.70 cm2 [ConsOC5]; for each use event, covers use amounts up to 0.48g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 8.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Washing car window	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 0.5g [ConsOC2]; Covers use in a one car garage (34m3) under typcial 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 typcial 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 typcial ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Laundry and dish washing products	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	OC	Unless otherwise stated, covers concentrations up to 15% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC9a:Coatings and paints, fillers putties, thinners--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 215g [ConsOC2]; Covers use in a one car garage (34m3) under typcial ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Fillers and putty	OC	Unless otherwise stated, covers concentrations up to 2% [ConsOC1]; covers use up to 12 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm2 [ConsOC5]; for each use event, covers use amounts up to 85g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];

	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Plasters and floor equalizers	OC	Unless otherwise stated, covers concentrations up to 0.6% [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 cm2 [ConsOC5]; for each use event, covers use amounts up to 13800g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b:Fillers, putties, plasters, modeling clay--Modelling clay	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 254.40 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1g [ConsOC13]; covers use in room size of 20m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC9c:Finger paints --Finger paints	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 1.35g [ConsOC13]; covers use in room size of 20m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products—Liquids	OC	Unless otherwise stated, covers concentrations up to 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 typcial ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC24: Lubricants, greases, and release products—Pastes	OC	Unless otherwise stated, covers concentrations up to 20% [ConsOC1]; covers use up to 10 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 34g [ConsOC2]; Covers use in a one car garage (34m3) under typcial ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products—Sprays	OC	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 73g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC35:Washing and cleaning products (including solvent based products)--Laundry and dish washing products	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 15g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC35:Washing and cleaning products (including solvent based products)--Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857.50 cm2 [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC35:Washing and cleaning products (including solvent based products)--Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	OC	Unless otherwise stated, covers concentrations up to 15% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0.17hr/event[ConsOC14];

	RMM	No specific RMMs identified beyond those OCs stated
PC38_n: Welding and soldering products, flux products--NOTE, n_assessment not in TRA	OC	Unless otherwise stated, covers concentrations up to 20% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 12g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

Section 2.2	**Control of environmental exposure**	
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	1.4 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 8.4c.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	Estimated substance removal from wastewater via domestic sewage treatment 93.57 (%) [STP3]	

plant	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 [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 *('Flexible' heading)***
3.1. Health		
Health sub-headings		When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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		Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment		
Environment sub-headings		Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Use of xylenes in oil field drilling and production operations – Industrial

Section 1	**Exposure Scenario Title**
Title	**Use in oil field drilling and production operations of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18].
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 [EI18].
Process sampling [CS2].	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
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 [EI18].
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 Environmental Factors not influenced by risk management	Emission days per year	*Not applicable*
	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 Organisation measures to prevent/limit release from site	Discharge to aquatic environment is restricted (see Section 4.2)	0.01
	Prevent environmental discharge consistent with regulatory requirements.	0.07

Conditions and measures related to municipal sewage treatment plant	Not applicable	0
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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
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 ktonnes/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*

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment -**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in oil field drilling and production operations – Professional

Section 1	**Exposure Scenario Title**
Title	**Use in oil field drilling and production operations of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18].
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 [EI18].
Process sampling [CS2].	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	No specific measures identified [EI18].
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 [EI18].
Batch process [CS55]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].

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 release from site	Prevent environmental discharge consistent with regulatory requirements.
Conditions and measures related to municipal sewage treatment plant	*Not applicable*
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Other environmental control measures additional to above	*Not applicable*
Basis for scaling	*Not applicable*
	Not applicable
	Not applicable

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.

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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
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 ktonnes/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*	
See Appendix C for further details		

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	

Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use in binders – Industrial

Section 1	**Exposure Scenario Title**
Title	**Use in binders and release agents of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18].

Material transfers [CS3]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Material transfers [CS3]. Batch process [CS55]. ; (closed systems) [CS107].	No specific measures identified [EI18].
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 [EI18].
Mixing operations (open systems) [CS30].	No specific measures identified [EI18].
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].	Minimise 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 [EI18].

Section 2.2	**Control of environmental exposure**
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	2.1 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 4.10a.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 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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	

On-site risk management measures	93.57 % efficiency water, 80 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use as a binder- Professional

Section 1	**Exposure Scenario Title**
Title	**Use as mould release and binder of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18].
Material transfers [CS3]. ; (closed systems) [CS107]With occasional controlled exposure [CS137]	No specific measures identified [EI18].
Material transfers [CS3]. ; (closed systems) [CS107]Batch process [CS55].	No specific measures identified [EI18].
Drum/batch transfers [CS8].	Transfer materials directly to mixing vessels [E45]
Mixing operations (closed systems) [CS29].	No specific measures identified [EI18].
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 [EI18].
Storage [CS67]With occasional controlled exposure [CS137]	No specific measures identified [EI18].

Section 2.2	**Control of environmental exposure**
Assessment method	EUSES 2.1.1 using default relase 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 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 8.10b.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	Negligible air emissions as process operates in a contained	

measures to reduce or limit discharges, air emissions and releases to soil	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 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	Not applicable

Section 3	**Exposure Estimation**

3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in agrochemicals – Professional

Section 1	**Exposure Scenario Title**
Title	**Use in agrochemicals of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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],
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 [EI18].

Section 2.2	**Control of environmental exposure**	
Assessment method	EUSES 2.1.1 using default relase 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 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	Local Freshwater dilution factor	10

influenced by risk management	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/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 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	Not applicable

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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 5 — Additional good practice advice beyond the REACH Chemical Safety Assessment

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	

Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in agrochemicals – Consumer

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**
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 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 0.3g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

PC27_n: Plant protection products--	*OC*	Unless otherwise stated, covers concentrations up to 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 cm2 [ConsOC5]; for each use event, assumes swallowed amount of 0.3g [ConsOC13]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

Section 2.2 Control of environmental exposure

Assessment method	EUSES 2.1.1 using default relase 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 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 [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	
	MSafe 6.50E+02 kg/day after RMM	
Substance Use	21 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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		Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment		
Environment sub-headings		Confirm 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.

Use of xylenes in fuels – Industrial

Section 1	**Exposure Scenario Title**
Title	**Use in Fuels of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
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 / minimise 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 [EI18].
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 [EI18]. {Wear suitable gloves tested to EN374 [PPE15]}.
General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
General exposures (closed systems) [CS15]. Batch process [CS55].	No specific measures identified [EI18].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]	No specific measures identified [EI18].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]Batch process [CS55].	No specific measures identified [EI18].
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	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	7 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 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 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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.

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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 95 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	

Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in fuels – Professional

Section 1	**Exposure Scenario Title**
Title	**Use in Fuels of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
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 / minimise 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 [EI18].

General exposures (closed systems) [CS15]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]Batch process [CS55].	No specific measures identified [EI18].
General exposures (open systems) [CS16]. ; (closed systems) [CS107]	No specific measures identified [EI18].
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	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	7 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 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 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 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, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5 Additional good practice advice beyond the REACH Chemical Safety Assessment

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use of xylenes in fuels – Consumer

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**
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 to37500g [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 cm2 [ConsOC5]; for each use event, covers use amounts up to 37500g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m3[ConsOC11]; for each use event, covers exposure up to 0.05hr/event[ConsOC14];
	RMM	No specific RMMs developed beyong 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 cm2 [ConsOC5]; for each use event, covers use amounts up to 3750g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m3[ConsOC11]; for each use event, covers exposure up to 0.03hr/event[ConsOC14];
	RMM	No specific RMMs developed beyong 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 beyong 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 typcial 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 beyong 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 beyong those OCs stated

Section 2.2	**Control of environmental exposure**	
Assessment method	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	7 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 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 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]	
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 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		
Health sub-headings		When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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		Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment		
Environment sub-headings		Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Use in laboratories – Industrial

Section 1	**Exposure Scenario Title**
Title	**Use in laboratory reagents of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18].
Cleaning [CS47]. Rolling, Brushing [CS51]. ; Vessel and container cleaning [CS103]Cleaning equiment, 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].

Section 2.2	**Control of environmental exposure**	
Assessment method	EUSES 2.1.1 using default relase fractions from ESVOC 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 ktonnes/year
	Regional tonnage	2.1 ktonnes/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	Treat air emission to provide a typical removal efficiency of >0% [TCR7]	

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

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.
4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	
Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

Use in laboratories – Professional

Section 1	**Exposure Scenario Title**
Title	**Use in laboratory reagents of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN 106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*

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 / minimise 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 [EI18]. {

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	EUSES 2.1.1 using default relase 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 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 8.17.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 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. [ETW3]	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]	
Other environmental control measures additional to above	*None*	

Section 3	**Exposure Estimation**
3.1. Health	When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1 as indicated in Appendix A.
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	Confirm that RMMs and OCs are as described or of equivalent efficiency. See Appendix A for details of efficiencies and OC.

4.2. Environment	Confirm 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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.
Control of environmental exposure	

Selection of relevant RMM Core Phrases	Good practice RMM phrases may be incorporated in Phrases this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system

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Rubber production

Section 1	Exposure Scenario Title
Title	**Use in rubber manufacturing and processing of Xylene isomers p-xylene, m-xylene, o-xylene;CAS RN106-42-3, 108-38-3, 95-47-6**
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.	
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 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. Organisational measures , 4. Personal protection. Phrases between brackets are good practice advice only, beyond REACH Chemical Safety Assessment and may be communicated in Section 5 of the ES or within the main sections of the SDS.*
Material transfers [CS3]. With occasional controlled exposure [CS137]	No specific measures identified [EI18].

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 [EI18].
Bulk weighing [CS91]With occasional controlled exposure [CS137]	No specific measures identified [EI18].
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 [EI18].
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]	Minimise 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]	Minimise 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 [EI18].
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	EUSES 2.1.1 using default relase 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 ktonnes/year
	Regional tonnage	4.2 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
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 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	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 ktonnes/year	
On-site risk management measures	93.57 % efficiency water, 0 % efficiency air	
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

Section 5	**Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)**
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Selection of relevant Contributing Scenario phrases	*Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.*
Control of environmental exposure	

Selection of relevant RMM Core Phrases	*Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.*