TRICE CHEMICALS INDUSTRIAL LLC
Quality First Reputation Foremost
Manufacturers of HIGH QUALITY HYGIENE PRODUCTS.
Traders & Distributers of INDUSTRIAL CHEMICALS.
A DUBAI MUNICIPALITY APPROVED, ISO & OHSAS CERTIFIED COMPANY.

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Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 18/04/2017 rev nº 14.1.C24.1

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

creation date: 01/04/2017
Replaced version: rev. 14.1.C8

1.1 Product identifier Xylene

Trade name: XYLENE

Product Safety number: QUI-032

CAS Number: 1330-20-7
EC number:
215-535-7
Index number: 601-022-00-9

Registration number 01-2119488216-32-0012

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

Application of the substance / the preparation
The uses not included on the Identified Uses list are not advised.

Identified uses and Exposure Scenarios: see section 16

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

TRICE CHEMICALS IND LLC

1.4 Emergency telephone number: 112

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2 Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.

GHS08 health hazard

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.
Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.

GHS07

Acute Tox. 4 H312 Harmful in contact with skin.
Acute Tox. 4 H332 Harmful if inhaled.
Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.

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


Xn; Harmful

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

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Xi; Irritant

R38: Irritating to skin.


F; Highly flammable

R10: Flammable.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labelled according to the CLP regulation.

Hazard pictograms GHS02, GHS07, GHS08

Signal word Danger

Hazard-determining components of labelling: Xylene

Hazard statements
H226 Flammable liquid and vapour.
H312 Harmful in contact with skin.
H332 Harmful if inhaled.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.
H304 May be fatal if swallowed and enters airways.

Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P243	Take precautionary measures against static discharge.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P331	Do NOT induce vomiting.

2.3 Other hazards
The vapours may form explosive mixtures with the air.
The colourless vapour is heavier than air, spreads along the ground and distant ignition is possible.
Risk of generation of static electricity while handling.

Results of PBT and vPvB assessment
PBT: See section 12.
vPvB: See section 12.

*
3 Composition/information on ingredients

3.1 Chemical characterization: Substances

CAS No. and name:
XILENO

Identification number(s) 601-022-00-9
EC number: 215-535-7

Additional information: contains ethylbenzene (CAS: 100-41-4): ca. 15% (w/w)

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4 First aid measures

4.1 Description of first aid measures

General information:
Before attempting to rescue casualties, isolate area from all potential sources of ignition including disconnecting electrical supply.
Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces.

After inhalation:
If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
If casualty is unconscious and:
- Not breathing:
Ensure that there is no obstruction to breathing and give artificial respiration by trained personnel.
If necessary, give external cardiac massage and obtain medical advice.
- Breathing:
Place in the recovery position.
Supply oxygen, if needed.

After skin contact:
Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity.
Remove contaminated clothing, contaminated footwear and dispose of safely.
Immediately flush affected area with plenty of soap and water – continue for at least 15 minutes.
Seek medical attention if skin irritation, swelling or redness develops and persists.

After eye contact:
Irrigate eyes with copious amounts of water for at least 10-15 min, holding eyelids apart to ensure thorough rinsing
Remove contact lenses, if present and easy to do so.
If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.
Do not administer eye drops or other liquid without medical approval

After swallowing:
It is not normal intake occur unless deliberately. However, if this happens, do not induce the vomiting and consult a doctor immediately.
If vomiting occurs, the head should be kept low so that the vomit does not enter the lungs (aspiration)
Seek professional medical attention or send the casualty to a hospital.
Do not give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed Exposure routes:

Inhalation:
Inhalation of vapours may cause headache, nausea, vomiting and an altered state of consciousness.
Exposure to high concentrations:
irritation of the upper respiratory tract
CNS depression.
Skin: Causes skin irritation.
Eyes:
Eye irritation.
Irritation can result in redness and swelling of the eyes.
Ingestion: Danger of serious lung damage by aspiration following vomiting.

Hazards Aspiration of liquid into the lungs may cause chemical pneumonia.

4.3 Indication of any immediate medical attention and special treatment needed

In case of vomiting may occur aspiration of fluid into the lungs, resulting in the possible occurrence of chemical pneumonia.
In case of ingestion, always assume that aspiration has occurred.

The victim should be sent to the hospital imediately.

Obtain medical attention if casualty has an altered state of consciousness or if symptoms do not resolve

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:
Foam (trained personnel only)
Water fog (trained personnel only)
Other inert gases (subject to regulations)
Carbon dioxide
Dry chemical powder
Sand or earth

For safety reasons unsuitable extinguishing agents:
Do not use direct water jets on the burning product:
they could cause splattering and spread the fire.
Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam

5.2 Special hazards arising from the substance or mixture

It may form explosive gas-air mixtures.
Serious danger of explosion in confined spaces in the presence of an ignition source.
Vapours are heavier than air. They can accumulate in low places, penetrate in drains and reach ignition sources far from the release point.
Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including carbon monoxide
This substance will float and can be reignited on surface water.

For related properties, see section 9.

5.3 Advice for firefighters

Protective equipment:
Wear self-contained respiratory protective device:
In case of a large fire or where there is a risk of oxygen deficiency.
Wear fully protective suit:
In case of a large fire.
Mouth respiratory protective device:
In case of a small fire.

Additional information
Cool endangered receptacles with water spray.
Avoid and control the spill if there is no risk.
People involved in the operation must be kept away from tanks and stay on the windward side.
Keep unnecessary people away of the place.
Collect contaminated fire fighting water separately. It must not enter the sewage system.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Isolate the area and prevent fire/explosion hazard for ships and other structures, taking into account wind direction and speed, until the product is completely dispersed.
Stop the leakage at the source, if there is no danger.
Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares)
Take measures against static electricity discharges.

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Ensure adequate ventilation of confined spaces, especially underground ones.
If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used
Keep non-involved personnel away from the area of spillage. Alert emergency personnel
Additional or special actions may be warranted including access restrictions, use of special protection equipment, procedures and personnel training
Exposure control: see chapter 8.

6.2 Environmental precautions:
Control the spreading of the spillage,
Suppress gases/fumes/haze with water spray.
In case of spillages on public ways, warn the Authorities.
In case of spillage in the sea or navigable watercourses, alert Authorities and other ships.

6.3 Methods and material for containment and cleaning up:
Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions
Contain spillage – ventilate area and allow to evaporate.
In case of soil contamination, remove contaminated soil and treat in accordance with local regulations.
In case of spillage in the water,
contain product with floating barriers or other equipment.
Ensure adequate ventilation.
Do not use solvents or dispersants, unless specifically advised by an expert, and, if required, approved by local authorities.
Collect free product with suitable means .
Collect recovered product and other materials in suitable tanks or containers for recovery or safe disposal.

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

7.1 Precautions for safe handling
Ensure good ventilation/exhaustion at the workplace.
Do not breathe the vapours.
Avoid contact with skin and eyes
Change contaminated clothes at the end of working shift
Avoid release to the environment
Avoid splashes or spray in enclosed areas.
Ensure that proper housekeeping measures are in place.

For more information regarding protective equipment and operational conditions see Exposure scenarios

Information about fire - and explosion protection:
Keep ignition sources away - Do not smoke.
Ensure that all relevant regulations regarding handling and storage facilities of flammable products are followed
Ground/bond containers, tanks and transfer/receiving equipment
Keep away from heat/sparks/open flames/hot surfaces.
Take precautionary measures against static electricity.
Do not use compressed air for filling, discharging, or handling operations.
Use explosion-proof electrical/ventilating/lighting equipment
Do not accumulate materials impregnated with the product on the workplace.

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7.2 Requirements to be met by storerooms and receptacles:
Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation.
Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills.
Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel. Explositivity limits must be checked.
Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability.
Regularly inspect, test and maintain all control measures.
For containers, or container linings use materials specifically approved for use with this product.

Recommended material
Recommended materials for containers, or container linings use mild steel, stainless steel.

Unsuitable materials
Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use.
Compatibility should be checked with the manufacturer.

Information about storage in one common storage facility:
Do not store together with oxidizing agents.

Further information about storage conditions:
If the product is supplied in containers:
Store in a designated cool and well-ventilated place.
Keep containers tightly closed and properly labelled.
Keep only in the original container or in a suitable container for this kind of product.
Empty containers may contain flammable product residues
Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

7.3 Specific end use(s) See Chapter 1.

8 Exposure controls/personal protection

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:

1330-20-7 XILENO

TLV (EU)	Short-term value: 442 mg/m³, 100 ppm Long-term value: 221 mg/m³, 50 ppm Cutânea
PEL (USA)	Long-term value: 435 mg/m³, 100 ppm
REL (USA)	Short-term value: 655 mg/m³, 150 ppm Long-term value: 435 mg/m³, 100 ppm
TLV (USA)	Short-term value: 651 mg/m³, 150 ppm Long-term value: 434 mg/m³, 100 ppm BEI

100-41-4 ethylbenzene

WEL (Great Britain)	Short-term value: 552 mg/m³, 125 ppm Long-term value: 441 mg/m³, 100 ppm
IOELV (EU)	Short-term value: 884 mg/m³, 200 ppm Long-term value: 442 mg/m³, 100 ppm Skin
PEL (USA)	Long-term value: 435 mg/m³, 100 ppm
REL (USA)	Short-term value: 545 mg/m³, 125 ppm Long-term value: 435 mg/m³, 100 ppm
TLV (USA)	Short-term value: 543 mg/m³, 125 ppm Long-term value: 87 mg/m³, 20 ppm BEI

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DNELs

Oral	DNEL	1.6 mg/kg/24h (consumers)
Dermal	DNEL	108 mg/kg bw/24h (c2)
		180 mg/kg bw/24h (workers)
Inhalative	DNEL	174 mg/m3 (consumers)
		174 mg/m3 (c1)
		14.8 mg/m3 (c2)
		289 mg/m3 (workers)
		289 mg/m3 (w2)
		77 mg/m3 (w3)

PNECs

PNEC STP	6.58 mg/L (st1)
PNEC aqua	0.327 mg/l (ad)
	0.327 mg/l (am)
	0.327 mg/l (li)
PNEC solo	2.31 mg/kg (sol)
PNECsediment	12.46 mg/kg (ad)
	12.46 mg/kg (am)

Additional information:

For further information see Exposure Scenarios in annex

8.2 Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Guarantee suitable ventilation at workplaces.
Do not carry product impregnated cleaning clothes in trouser pockets.
Wash hands before breaks and at the end of work.
Do not eat or drink while working.
Keep away from foodstuffs, beverages and feed.

Respiratory protection:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Organic vapour filter (type A)

Protection of hands:
Wear protective gloves.
Gloves must be periodically inspected to detect wearing, perfurations or contaminations.

Material of gloves
The glove material has to be impermeable and resistant to the product.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

Suitable materials:
Nitrile rubber.
Fluorocarbon rubber (Viton)

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:
Wear a safety visor or goggles whenever the projection of the product is expected.

Body protection: Wear protective suit.

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Trade name: XYLENE

Limitation and supervision of exposure into the environment
Handle and store according to regulations and applicable good practices.
Dispose according to the legislation in force.

Risk management measures see EXPOSURE SCENARIOS (annex)

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information	Data in this section intends to describe the main properties for safety in storage, handling and use of the product. They should not be understood as product specifications.
Appearance:	
Form:	Liquid
Colour:	Colourless
Odour:	Aromatic
pH-value:	Not applicable because it is not an aqueous medium.
Change in condition	
Melting point/Melting range:	Data from Chemical Safety Report - REACH Registration Dossier (-94) - 13.2 (literat.) ºC
Boiling point/Boiling range:	137-143°C
Flash point:	> 25°C Data from Chemical Safety Report - REACH Registration Dossier
Flammability (solid, gaseous):	Not applicable. Liquid product.
Decomposition temperature:	see Section 10.
Self-igniting:	Data from Chemical Safety Report - REACH Registration Dossier 432 - 528 (literat.) ºC
Danger of explosion:	Formation of explosive air/vapour mixtures is possible.
Explosion limits:	
Lower:	Data from Chemical Safety Report - REACH Registration Dossier 0.8 (literat.) % (v/v)
Upper:	Data from Chemical Safety Report - REACH Registration Dossier 7 (literat.) % (v/v)
Vapour pressure at 20°C:	650-944 hPa Data from Chemical Safety Report - REACH Registration Dossier
Vapour pressure at 20ºC	Data from Chemical Safety Report - REACH Registration Dossier 650 - 944 (literat.) Pa
Density:	
Vapour density	Heavier than the air.
Evaporation rate	Not determined.
Relative density at 60/60ºF	0.865 - 0.875

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Trade name: XYLENE

Solubility in / Miscibility with water: Data from Chemical Safety Report - REACH Registration Dossier
146 - 190.7mg/l, 25ºC

Segregation coefficient (n-octanol/water): Data from Chemical Safety Report - REACH Registration Dossier
3.12 - 3.2 (literat.) log Kow

Viscosity:

Kinematic viscosity at 25ºC 0.581-0.76 mPa
Data from Chemical Safety Report - REACH Registration Dossier

Oxidising properties Based on the chemical structure, the substance doesn't react exothermically with combustible materials.

9.2 Other information No further relevant information available.

10 Stability and reactivity

10.1 Reactivity See section 10.3.

10.2 Chemical stability The product is stable.

Thermal decomposition / conditions to be avoided:
No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions Dangerous reactions with strong oxidizing agents.

10.4 Conditions to avoid
Avoid proximity to sources of heat and ignition.
Avoid vapour accumulation.

10.5 Incompatible materials: Strong oxidizing agents.

10.6 Hazardous decomposition products:
Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including carbon monoxide

11 Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification:

Oral	LD50	3523 mg/kg bw (rat)
Dermal	LD50	12.126 mg/kg bw (rbt)
Inhalative	LC50	27.124 mg/m3 (rat)

Primary irritant effect:

on the skin:
Causes skin irritation.
Harmful in contact with skin.

on the eyes: Causes serious eye irritation.

by inhalation:
Harmful by inhalation.
May cause respiratory irritation.

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Aspiration:
In case of vomiting, the aspiration of liquid into the lungs may occur, which may lead rapidly to development of chemical pneumonia.

Additional toxicological information:
Harmful
Irritant

Sensitisation No evidence of sensitizing effects.

Repeated dose toxicity
NOAEL (oral): 250 mg/kg bw/day
NOAEC (inhalation): 3515 mg/m3
May cause damage to organs through prolonged or repeated exposure.
Affected organs: ototoxicity.

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)
Not classified as carcinogenic according to European Union criteria.
Not classified as mutagenic according to European Union criteria.
Not classified as reprotoxic according to European Union criteria.

12 Ecological information

12.1 Toxicity

Aquatic toxicity:

EC50/72h	2.2 mg/l (chlorella vulgaris)
IC50/24h	1 mg/l (daphnia)
LC50/96h	2.6 mg/l (fish)
NOEC (3h)	157 mg/l (la)
NOEC/56d	>1.3 mg/l (fish)
NOEC/7d	0.96 mg/l (daphnia)

12.2 Persistence and degradability

Easily biodegradable
Expected to rapidly degrade by indirect photolysys in air.
Not expected to undergo hydrolysis in the environment.
Degradation rates:

- Degradation rate in water: kdegwater: 0.047 d-1
- Degradation rate in sediment: kdegsed: 0.0023d-1
- Degradation rate in soil: kdegsoil: 0.023 d-1
- Degradation rate in air: kdegair: 0.66 -0.72d-1

Expected to be readily biodegradable.

12.3 Bioaccumulative potential

The product does not bioaccumulate.
The highest BCF reported value for fish is 25.9.
Low potential for bioaccumulation.

12.4 Mobility in soil

The log Kow of the xylene isomers and ethylbenzene ranges from 3.12 to 3.2 which suggests that they have the potential to sorb to soil and sediment.
The log Koc of o-xylene estimated using a HPLC method is 2.73. Based on similar physicochemical properties this is considered appropriate for read across to xylene isomers and ethylbenzene.

12.5 Results of PBT and vPvB assessment

PBT: The substance does not meet PBT criteria.
vPvB: The substance does not meet the vPvB criteria.

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Trade name: XYLENE

12.6 Other adverse effects No further relevant information available.

13 Disposal considerations

13.1 Waste treatment methods The residues of this product should be treated as hazardous waste.

Product:
The generation of waste should be avoided or minimised wherever possible.
Waste product residues should not be disposed of via the foul sewer.
Product surpluses must be disposed according to legislation in force in authorised plants.
Don't allow wastes to spoil the soil, the water or be released in the environment.
Disposal of this product should at all times comply with the requirements of environmental protection and waste disposal legislation.

European waste catalogue
14 06 03* Other solvents and solvent mixes
These codes can be given only as a suggestion, according to the original composition of the product, and its intended (foreseeable) use(s).
The final user has the responsibility for the attribution of the most suitable code, according to the actual use(s) of the material, contaminations or alterations.

Uncleaned packaging:
Packaging containing residues of or contaminated by dangerous substances: code for the waste 15 01 10*
Contaminated packages must be disposed according to legislation in force in authorised plants.
Disposal of this product should at all times comply with the requirements of environmental protection and waste disposal legislation.
Recycle if possible.

14 Transport information

14.1 UN-Number

ADR, IMDG, IATA	UN1307

14.2 UN proper shipping name

ADR	1307 XYLENES
IMDG, IATA	XYLENES

14.3 Transport hazard class(es)

ADR

Class	3 (F1) Flammable liquids.
Label	3

IMDG, IATA

Class	3 Flammable liquids.
Label	3

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14.4 Packing group
ADR, IMDG III

14.5 Environmental hazards:
Marine pollutant: No

14.6 Special precautions for user Warning: Flammable liquids.
Danger code (Kemler): 30
EMS Number: F-E,S-D

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Marpol Annex II: Xylene.
Marpol category: Y.
Ship type: Chemical, Type 2.

Transport/Additional information:

ADR
Limited quantities (LQ) 5L
Transport category 3
Tunnel restriction code D/E

UN "Model Regulation": UN1307, XYLENES, 3, III

15 Regulatory information

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

USA: SARA 313 (Specific toxic chemical listings)
XILENO

USA: TSCA (Toxic Substances Control Act)
XILENO

USA: EPA (Environmental Protection Agency)
XILENO

USA: IARC (International Agency for Research on Cancer)
XILENO

Philippines Inventory of Chemicals and Chemical Substances
XILENO

Chinese Chemical Inventory of Existing Chemical Substances (IECSC)
XILENO

Japan: Existing and New Chemical Substance List (ENCS)
XILENO 3-60

Korean Existing Chemical Inventory (KECL)
XILENO KE-35427

National regulations:

Other regulations, limitations and prohibitive regulations
If placed in the market for general public, containers must be fitted with child resistent fastenings.
If placed in the market for general public, containers must have a tactile warning device.

15.2 Chemical safety assessment: A Chemical Safety Assessment has been carried out.

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* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
This document contains relevant information to guarantee safety in storage, handling and use of this product.
It must be made available and explained to the workers involved and to safety supervisors.

Exposure Scenarios

Industrial use:
Manufacture of Substance.
Distribution of substance.
Use of substance as intermediate.
Formulation & (re)packing of substances and mixtures.
Uses in Coatings.
Use in Cleaning Agents.
Lubricants.
Use as binders and release agents.
Use as a fuel.
Polymer production.
Use in polymer processing.
Use as a functional fluids.
Oil field well drilling and production operations.
Use in Laboratories.
Explosives manufacture & use.
Rubber production and processing
Mining chemicals.

Professional use:
Uses in Coatings.
Use in Cleaning Agents.
Lubricants.
Use as binders and release agents.
Use in agrochemicals.
Use as a fuel.
Use in polymer processing.
Use as a functional fluids.
Oil field.
Road and construction applications.
Use in Laboratories.

Consumer use:
Uses in Coatings.
Use in Cleaning Agents.
Lubricants.
Use in agrochemicals.
Use as a fuel.
Use as a functional fluids.

Department issuing MSDS:
Galp Energia: Ambiente, Qualidade e Segurança - Corporativo

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Legend:
n.a.: not available
n.d.: not determined
ca.: approximately

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

Sources: REACH - Chemical Safety Report

*** Data compared to the previous version altered.**
Relevant modifications have been made in sections marked with (*).
Update of Exposure Scenarios

MATERIAL SAFETY DATA SHEET annex EXPOSURE SCENARIOS

Section 1	Exposure Scenario
Title	**Manufacture - Industrial**

Use Descriptor	
Sector of Use	3
Process Categories	1, 2, 3, 4, 8a, 8b, 15
Environmental Release Categories	1, 4
Processes, tasks, activities covered	Manufacture of this substance or use as an intermediate or process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - OC4.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) - G13.
Amounts used	Not applicable.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable.
Other operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. With sample collection - CS56. With ocassional controlled exposure - CS140.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. Use in contained batch processes - CS37.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
General exposures (open systems) - CS16. Batch process - CS55. With sample collection - CS56.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Process sampling-CS2	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Laboratory activities - CS36.	No specific measures identified - EI18.

Bulk transfers - CS14. (open systems) - CS108. With potential for aerosol generation - CS138.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Bulk transfers- CS14. (closed systems) - CS107.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Equipment cleaning and maintenance- CS39	Drain down system prior to equipment break-in or maintenance - E65.
Storage- CS67. With occasional controlled exposure- CS137	Handle substance within a closed system - E47.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log kow is 3.16 and is readily biodegradable.	
Amounts Used	
EU tonnage (ktonnes/year)	1000 ktonnes/year
Regional tonnage (ktonnes/year)	100 ktonnes/year
Fraction of main local source	0.5
Frequency and duration of use	
Emission Days (days/year): - FD4	300
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	40
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.01
Release fraction to waste water from process: - OOC5	0.0001

Title	**Manufacture - Industrial**

Release fraction to soil from process (regional only): - OOC6	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%): - TCR7	>90
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Prevent discharge of undissolved substance to or recover from onsite wastewater - TCR14.	
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils-OMS2	
Sludge should be incinerated, contained or reclaimed-OMS3	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated - EWR2.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated - EWR2.	
Other envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	

Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in waste water treatment plant.	
Values for Scaling Purposes	
DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Environment
	Risk-driving Compartment- Sewage Treatment Plant
	Msafe 2.08E+06 kg/day after RMM
Substance use	50 ktonnes/year
On-site risk management measures	93.67% efficiency water, 90% efficiency air
Dilution factors	Freshwater: 40
	Marine water: 100
Initial release percent at site to watre (before RMM)	0.01
Typical release to water after RMM	1.38E-02 mg/l

Section 1	Exposure Scenario
Title	**Use as an intermediate - Industrial**

Use Descriptor	
Sector of Use	3
Process Categories	1, 2, 3, 4, 8a, 8b, 15
Environmental Release Categories	1, 4
Processes, tasks, activities covered	Manufacture of this substance or use as an intermediate or process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - OC4
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) - G13.
Amounts used	Not applicable.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable.
Other operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. With sample collection - CS56. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. Use in contained batch processes - CS37.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
General exposures (open systems) - CS16. Batch process - CS55. With sample collection - CS56.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Process sampling - CS2.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Laboratory activities - CS36.	No specific measures identified - EI18.
Bulk transfers - CS14. (open systems) - CS108. With potential for aerosol generation - CS138.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Bulk transfers - CS14. (closed systems) - CS107.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Equipment cleaning and maintenance - CS39.	Drain down system prior to equipment break-in or maintenance - E65.
Storage - CS67. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log kow is 3.16 and is readily biodegradable.	
Amounts Used	
EU tonnage (ktonnes/year): - A1	150 ktonnes/year
Regional tonnage (ktonnes/year): - A2	15 ktonnes/year
Fraction of main local source: - A3	0.25
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.001
Release fraction to waste water from process: - OOC5	0.003
Release fraction to soil from process (regional only): - OOC6	0.001

Title	**Use as an intermediate - Industrial**

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 (%): - TCR7	>80
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Prevent discharge of undissolved substance to or recover from onsite wastewater - TCR14.	
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Sludge should be incinerated, contained or reclaimed - OMS3.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 - ERW3.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated - ERW3.	
Other envirnonmental 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 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 93.67% 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 16984 kg/day after RMM
Substance use	3.75 ktonnes/year
On-site risk management measures	93.67% efficiency water, 80% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	0.3
Typical release to water after RMM	1.19E-01 mg/l

Section 1	Exposure Scenario
Title	**Distribution of substance - Industrial**

Use Descriptor	
Sector of Use	3, 8, 9
Process Categories	1, 2, 3, 4, 8a, 8b, 9, 15
Environmental Release Categories	1, 7
Processes, tasks, activities covered	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its distribution and associated laboratory activities.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - 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 more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. With sample collection - CS56. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. Use in contained batch processes - CS37.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
General exposures (open systems) - CS16. Batch process - CS55. With sample collection - CS56.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Process sampling - CS2.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Laboratory activities - CS36.	No specific measures identified [EI18].
Bulk transfers - CS14. (closed systems) - CS107.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Bulk transfers - CS14. (open systems) - CS108.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].
Drum and small package filling - CS6.	Transfer via enclosed lines [E52].
Equipment cleaning and maintenance CS39.	Drain down and flush system prior to equipment break-in or maintenance [E55].
Storage - CS67. With occasional controlled exposure - CS140.	Handle substance within a closed system [E47].
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year): - A1	1000
Regional tonnage (ktonnes/year): - A2	100

Title	**Distribution of substance - Industrial**

Fraction of main local source: - A3	0.002
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.001
Release fraction to waste water from process: - OOC5	0.00001
Release fraction to soil from process (regional only): - OOC6	0.00001
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 (%): - TCR7	>90
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Prevent discharge of undissolved substance to or recover from onsite 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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in waste-water treatment plant.	
Values for Scaling Purposes	

Title	**Distribution of substance - Industrial**

DSU 4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Environment
	Risk-driving Compartment- Freshwater Sediment
	Msafe 2.58E+05 kg/day after RMM
Site use	0.2 ktonnes/year
On-site risk management measures	93.67% efficiency water, 90% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	0.001
Typical release to water after RMM	6.51E-04 mg/l

Section 1	**Exposure Scenario**
Title	**Formulation & (re)packing - Industrial**

Use Descriptor	
Sector of Use	3, 10
Process Categories	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15
Environmental Release Categories	2
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**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - 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 more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. With sample collection - CS56. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. Use in contained batch processes - CS37.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
General exposures (open systems) - CS16. Batch process - CS55. With sample collection - CS56. With potential for aerosol generation - CS138.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Batch processes at elevated temperatures - CS136.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Process sampling - CS2.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.

Laboratory activities - CS36.	No specific measures identified - EI18.
Bulk transfers - CS14.	Ensure material transfers are under containment or extract ventilation - E66.
Mixing operations (open systems) - CS30. With potential for aerosol generation - CS138.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Manual - CS34. Transfer from/pouring from containers - CS22.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Drum/batch transfers - CS8.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Production or preparation or articles by tabletting, compression, extrusion or pelletisation -CS100.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Drum and small package filling - CS6.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.

Title	**Formulation & (re)packing - Industrial**

Equipment cleaning and maintenance CS39.	Drain down and flush system prior to equipment break-in or maintenance-E55.
Storage - CS67. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year): - A1	150
Regional tonnage (ktonnes/year): - A2	15
Fraction of main local source: - A3	0.25
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.01
Release fraction to waste water from process: - OOC5	0.002
Release fraction to soil from process (regional only): - OOc6	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%): - TCR7	0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Prevent discharge of undissolved substance to or recover from onsite wastewater - TCR14.	
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements): - OOC11.	
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Sludge should be incinerated, contained or reclaimed - OMS3.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental control measures additional to above	
None	
Section 3	**Exposure Estimation**
3.1. Health	

Title	**Formulation & (re)packing - Industrial**

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.
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 exposure Scenario**
4.1. health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% 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 6.31 kg/day after RMM
Site use	3.75 ktonnes/year
On-site risk management measures	93.67% efficiency water, 0% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	0.2
Typical release to water after RMM	7.96E-02 mg/l

Section 1	**Exposure Scenario**
Title	**Use in Coatings - Industrial**

Use Descriptor	
Sector of Use	3
Process Categories	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19.
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**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP - OC5.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) - G13.
Amounts used	Not applicable.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable.
Other operational Conditions affecting worker exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	HandLe substance within a closed system - E47.

General exposures (closed systems) - CS15. With sample collection - CS56. Use in contained systems - CS38.	HandLe substance within a closed system - E47.
Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing - CS94.	HandLe substance within a closed system - E47.
Mixing operations (closed systems) - CS29. General exposures (closed systems) - CS15.	HandLe substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Film formation - air drying - CS95.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Preparation of material for application - CS96. Mixing operations (open systems) - CS30.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40.
Spraying (automatic/robotic) - CS97.	Carry out in a vented booth provided with laminar airflow - E59.
Manual - CS34. Spraying - CS10.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Material transfers - CS3. Non-dedicated facility - CS82.	Ensure material transfers are under containment or extract ventilation - E66.
Material transfers - CS3. Dedicated facility - CS81	Ensure material transfers are under containment or extract ventilation - E66.
Roller, spreader, flow application - CS98.	Provide extract ventilation to points where emissions occur - E54.
Dipping, immersion and pouring - CS4.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40.
Laboratory activities - CS36.	No specific measures identified - EI18.

Title	**Use in Coatings - Industrial**

Material transfers - CS3. Drum/batch transfers - CS8. Transfer from/pouring from containers - CS22.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40.
Production or preparation or articles by tabletting, compression, extrusion or pelletisation -CS100.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40.
Equipment cleaning and maintenance CS39.	Drain down system prior to equipment break-in or maintenance - E65.
Storage - CS67. Product sampling - CS137.	HandLe substance within a closed system - E47.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable.	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50 ktonnes/year
Regional tonnage (ktonnes/year): - A2	5 ktonnes/year
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	300
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process before RMMs	0.098
Release fraction to waste water from process before RMMs	0.007
Release fraction to soil from process before RMMs	0,00E+00
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 (%): - TCR7	more than 90%
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67%
Soil emission controls are not applicable as there is no direct release to soil - TCR4.	
Prevent discharge of undissolved substance to or recover from onsite wastewater - TCR14.	
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Sludge should be incinerated, contained or reclaimed - OMS3.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67%
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000 (m3/d)
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.	

Title	**Use in Coatings - Industrial**

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 envirnonmental 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.	
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 exposure Scenario**
4.1. health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in waste water treatment plant.	
Values for Scaling Purposes	
DSU4 : 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 68871 kg/day after RMM
Site use	5 ktonnes/year
On-site emission factors	93.67% efficiency water, 90% efficiency air
Dilution factors	Freshwater - 10
	Marine Water - 100
Initial release percent at site to watre (before RMM)	0.7
Typical release to water after RMM	3.75E-02 mg/l

Section 1	**Exposure Scenario**
Title	**Use in coatings - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19
Environmental Release Categories	8A, 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, 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**
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	Assumes use at not more than 20°C above ambient temperature, unless stated differently - G15.

worker exposure	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	Handle substance within a closed system - E47.
Filling / preparation of equipment from drums or containers - CS45.	Handle substance within a closed system - E47. Ensure material transfers are under containment or extract ventilation - E66.
General exposures (closed systems) - CS15. Use in contained systems - CS38.	Handle substance within a closed system - E47. Ensure material transfers are under containment or extract ventilation - E66.
Preparation of material for application - CS96.	Handle substance within a closed system - E47. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Film formation - air drying - CS95. Outdoor - OC9.	Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 1 hour - OC27. Wear suitable gloves tested to EN374 - PPE15.
Film formation - air drying - CS95. Indoor - OC8.	Provide extract ventilation to points where emissions occur - E54. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Preparation of material for application - CS96. Indoor - OC8.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Preparation of material for application - CS96. Indoor - OC9.	Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Material transfers - CS3. Drum/batch transfers - CS8.	Transfer via enclosed lines - E52. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Roller, spreader, flow application - CS98. Indoor - OC8.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Roller, spreader, flow application - CS98. Outdoor - OC9.	Ensure operation is undertaken outdoors - E69. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Manual - CS34. Spraying - CS10. Indoor - OC8.	Carry out in a vented booth provided with laminar airflow - E59.
Manual - CS34. Spraying - CS10. Outdoor - OC9.	Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 4 hours - OC28. Wear suitable gloves tested to EN374 - PPE15. Wear a full face respirator conforming to EN140 with Type A filter or better - PPE24.
Dipping, immersion and pouring - CS4. Indoor - OC8.	Provide extract ventilation to points where emissions occur - E54. Avoid carrying out activities involving exposure for more than 4 hours - OC28.

Title	Use in coatings - Professional

Dipping, immersion and pouring - CS4. Outdoor - OC9.	Ensure operation is undertaken outdoors - E69. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Laboratory activities - CS36.	Handle in a fume cupboard or under extract ventilation - E83.
Hand application - fingerpaints, pastels, adhesives - CS72. Indoor - OC8.	Limit the substance content in the product to 5% - OC17. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Wear suitable gloves tested to EN374 - PPE15.
Hand application - fingerpaints, pastels, adhesives - CS72. Outdoor - OC9.	Limit the substance content in the product to 5% - OC17. Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 4 hours - OC28. Wear suitable gloves tested to EN374 - PPE15.
Equipment cleaning and maintenance CS39.	Drain down system prior to equipment break-in or maintenance - E65. Avoid carrying out activities involving exposure for more than 4 hours - OC28.
Storage - CS67. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50
Regional tonnage (ktonnes/year): - A2	5
Fraction of main local source: - A3	0.002
Frequency and duration of use	
Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.98
Release fraction to waste water from process: - OOC5	0.01
Release fraction to soil from process (regional only): - OOC6	0.01
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%): - TCR7	0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization 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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
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- sediment
	Msafe 4628 kg/day after RMM
Substance use	0.01 ktonns/year
On-site risk management measures	93.67% efficiency water, 0% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	1
Typical release to water after RMM	1.50E-03 mg/l

Section 1	**Exposure Scenario**
Title	**Use in cleaning agents - Industrial**

Use Descriptor	
Sector of Use	SU3, SU10
Process Categories	PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13
Environmental Release Categories	ERC4
Processes, tasks, activities covered	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - 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 more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.

Contributing Scenarios	Risk Management Measures
Bulk transfers - CS14.	Ensure material transfers are under containment or extract ventilation - E66.
Automated process with (semi) closed systems - CS93. Use in contained systems - CS38.	Handle substance within a closed system - E47.
Automated process with (semi) closed systems - CS93. Use in contained systems - CS38. Drum/batch transfers - CS8.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Application of cleaning products in closed systems - CS101.	Handle substance within a closed system - E47.
Filling / preparation of equipment from drums or containers - CS45. Dedicated facility - CS81.	Provide extract ventilation to points where emissions occur - E54.
Use in contained batch processes - CS37. Treatment by heating - CS129.	Provide extract ventilation to points where emissions occur - E54.
Degreasing small objects in cleaning station - CS41.	Provide extract ventilation to points where emissions occur - E54.
Cleaning with low-pressure washers - CS42.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40.
Cleaning with high pressure washers - CS44.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40. Avoid carrying out activities involving exposure for more than 1 hour - OC27. Wear suitable gloves tested to EN374 - PPE15.
Manual - CS34. Surfaces - CS48. Cleaning - CS47. No spraying - CS60.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Equipment cleaning and maintenance - CS39.	Drain down system prior to equipment break-in or maintenance - E65.
Storage - CS67. With occasional controlled exposure - CS140.	HandLe substance within a closed system - E47.

Title	**Use in cleaning agents - Industrial**

Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable.	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50 ktonnes/year
Regional tonnage (ktonnes/year): - A2	5 ktonnes/year
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	1,00E+00
Release fraction to waste water from process: - OOC5	0.00003
Release fraction to soil from process (regional only): - OOC6	0,00E+00
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 (%): - TCR7	More than 70%.
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67%
Soil emission controls are not applicable as there is no direct release to soil - TCR4.	
Prevent discharge of undissolved substance to or recover from onsite 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 (%): - STP3	93.67%
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000 (m3/d)
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 envirnonmental 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.	
3.2. Environment	

Title	**Use in cleaning agents - Industrial**

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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The requered efficiency removal from water is 93.67 % which would be typically found in wastewater 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 340832 kg/day after RMM
Site use	5 ktonnes/year
On-site emission factors	93.67% efficiency water, 70% efficiency air
Dilution factors	Freshwater - 10
	Marine water - 100
Initial release percent at site to watre (before RMM)	0.003
Typical release to water after RMM	2.21E-03 mg/l

Section 1	**Exposure Scenario**
Title	**Use in Cleaning Agents - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 3, 4, 8a, 8b, 10, 11, 13
Environmental Release Categories	8A, 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**
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**
Filling / preparation of equipment from drums or containers - CS45. Dedicated facility - CS81.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Automated process with (semi) closed systems - CS93. Use in contained systems - CS38.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.

Automated process with (semi) closed systems - CS93. Use in contained systems - CS38. Drum/batch transfers - CS8.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products) - CS76.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Filling / preparation of equipment from drums or containers - CS45. Outdoor - OC9.	Use drum pumps or carefully pour from container - E64. Ensure operation is undertaken outdoors - E69.
Manual - CS34. Cleaning - CS47. Surfaces - CS48. Dipping, immersion and pouring - CS4.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Cleaning with low-pressure washers - CS42. Rolling, Brushing - CS51. No spraying - CS60.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Cleaning with high pressure washers - CS44. Spraying - CS10. Indoor - OC8.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40]. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Cleaning with high pressure washers - CS44. Spraying - CS10. Outdoor - OC9.	Limit the substance content in the product to 5% - OC17. Ensure operation is undertaken outdoors - E69. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Manual - CS34. Surfaces - CS48. Cleaning - CS47. Spraying - CS10.	Provide extract ventilation to points where emissions occur - E54. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.

Title	Use in Cleaning Agents - Professional

Ad hoc manual application via trigger sprays, dipping, etc. - CS27. Rolling, Brushing - CS51.	Provide extract ventilation to points where emissions occur - E54. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Ad hoc manual application via trigger sprays, dipping, etc. - CS27. Rolling, Brushing - CS51.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Application of cleaning products in closed systems - CS101. Outdoor - OC9.	Handle substance within a closed system - E47. Ensure operation is undertaken outdoors - E69.
Cleaning of medical devices - CS74.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60.
Equipment cleaning and maintenance CS39.	Drain down system prior to equipment break-in or maintenance - E65. Avoid carrying out activities involving exposure for more than 4 hours - OC28.
Storage - CS67. With occasional controlled exposure - CS140.	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**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50 ktonnes/year
Regional tonnage (ktonnes/year): - A2	5 ktonnes/year
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	
Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process before RMMs: - OOC4	0.02
Release fraction to waste water from process before RMMs: - OOC5	0.000005
Release fraction to soil from process before RMMs: - OOC6	0,00E+00
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 (%): - TCR7	0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization 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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	20000

Title	Use in Cleaning Agents - Professional

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 envirnonmental 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.	
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 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 93.67% which would be typically found in wastewater treatment plant.	
Values for Scaling Purposes	
DSU4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Environment
	Risk-driving Compartment – Freshwater sediment
	Msafe 11003 kg/day after RMM
Substance use	0.01 ktonnes/year
On-site risk management measures	93.67 % 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	6.30E-04 mg/l

Section 1	Exposure Scenario
Title	**Use in lubricants - Industrial**

Use Descriptor	
Sector of Use	3, 10
Process Categories	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17
Environmental Release Categories	7, 4
Processes, tasks, activities covered	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - OC4.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) - G13.
Amounts used	Not applicable.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable.
Other operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. Batch process - CS55.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
General exposures (open systems) - CS16. With occasional controlled exposure - CS140.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
General exposures (open systems) - CS16. Batch process - CS55.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Bulk transfers - CS14. Dedicated facility - CS81.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Filling / preparation of equipment from drums or containers - CS45. Non-dedicated facility - CS82.	Use drum pumps or carefully pour from container - E64.
Filling / preparation of equipment from drums or containers [CS45]. Dedicated facility [CS81].	Use drum pumps or Use drum pumps or carefully pour from container - E64. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Initial factory fill of equipment - CS75.	Ensure material transfers are under containment or extract ventilation - E66.
Operation and lubrication of high energy open equipment - CS17. Indoor - OC8.	Restrict area of openings to equipment - E68. Provide extract ventilation to points where emissions occur - E54.
Operation and lubrication of high energy open equipment - CS17. Indoor - OC8.	Restrict area of openings to equipment - E68. Provide extract ventilation to points where emissions occur - E54.
Manual roller application or brushing - CS13.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.

Treatment by dipping and pouring - CS35.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Spraying - CS10.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60.
Maintenance (of larger plant items) and machine set up - CS77.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Ensure material transfers are under containment or extract ventilation - E66.
Maintenance of small items - CS18.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Remanufacture of reject articles - CS19.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Storage - CS67.	Handle substance within a closed system - E47.
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year): - A1	50 ktonnes/year
Regional tonnage (ktonnes/year): - A2	5 ktonnes/year
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.005
Release fraction to waste water from process: - OOC5	0.0003
Release fraction to soil from process (regional only): - OOC6	0.001
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 (%): - TCR7	>70
Typical onsite wastewater treatment technology provides removal efficiency: - TCR11	93.67%
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 (%): - STP3	93.97
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in wastewater 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 169205 kg/day after RMM
Site use	5 ktonnes/year
On-site emission factors	93.67% efficiency water, 70% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to water (before RMM)	0.03
Typical release to water after RMM	1.64E-02 mg/l

Section 1	**Exposure Scenario**
Title	**Use in lubricants - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13, 17, 18, 20
Environmental Release Categories	ERC 8a, ERC 8d, ERC 9a, ERC 9b
Processes, tasks, activities covered	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - OC4.
Concentration of substance in product	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Amounts used	Not applicable.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable.
Other operational Conditions affecting worker exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
General exposures (closed systems) - CS15.	Handle substance within a closed system - E47.
General exposures (closed systems) - CS15. Batch process - CS55.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.

General exposures (closed systems) - CS15.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
General exposures (open systems) - CS16.	Ensure material transfers are under containment or extract ventilation - E66.
Bulk transfers - CS14. Dedicated facility - CS81.	Transfer via enclosed lines - E52.
Filling / preparation of equipment from drums or containers - CS45. Dedicated facility - CS81.	Transfer via enclosed lines - E52.
Filling / preparation of equipment from drums or containers - CS45. Non-dedicated facility - CS82	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Use drum pumps or carefully pour from container - E64.
Operation and lubrication of high energy open equipment - CS17.	Restrict area of openings to equipment - CS68. Provide extract ventilation to points where emissions occur - E54.
Operation and lubrication of high energy open equipment - CS17.	Restrict area of openings to equipment - CS68. Provide extract ventilation to points where emissions occur - E54. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Operation and lubrication of high energy open equipment - CS17. Outdoor - OC9.	Limit the substance content in the product to 5 % - OC17. Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 4 hours - OC28.
Operation and lubrication of high energy open equipment - CS17.	Limit the substance content in the product to 5 % - OC17. Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40.
Maintenance (of larger plant items) and machine set up - CS77. Dedicated facility - CS81.	Ensure material transfers are under containment or extract ventilation - E66.

Title	Use in lubricants - Professional

Maintenance (of larger plant items) and machine set up - CS77.	Provide extract ventilation to emission points when contact with warm (>50oC) lubricant is likely - E67. Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40.
Maintenance of small items - CS18.	Drain down and flush system prior to equipment break-in or maintenance - E55. Provide a good standard of controlled ventilation (10 to 15 air changes per hour) - E40. Avoid carrying out activities involving exposure for more than 4 hours - OC28.
Engine lubricant service - CS78.	Transfer via enclosed lines - E52. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Wear suitable gloves tested to EN374 - PPE15.
Batch process - CS55. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50 ktonnes/year
Regional tonnage (ktonnes/year): - A2	5 ktonnes/year
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	
Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM): - OOC4	0.01
Release fraction to wastewater from process (initial release prior to RMM): OOC5	0.01
Release fraction to soil from process (initial release prior to RMM): - OOC6	0.01
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%): - TCR7	>0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization 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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000 (m3/d)
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 envirnonmental 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.	
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 exposure Scenario**
4.1. health	
Confirm that RMMs and Ocs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and Ocs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% 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 sediment
	Msafe 4628 kg/day after RMM
Site Use	0.01 ktonnes/year
On-site emission factors	93.67% efficiency water, 0% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	1
Typical release to water after RMM	1.50E-03 mg/l

Section 1	**Exposure Scenario**
Title	**Use in binders and release agents - Industrial**

Use Descriptor	
Sector of Use	3, 8, 9
Process Categories	1, 2, 3, 4, 6, 8b, 10, 13, 14
Environmental Release Categories	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**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - 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 more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Material transfers - CS3.	Handle substance within a closed system - E47.

Material transfers - CS3. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
Material transfers - CS3. Batch process - CS55. (closed systems) - CS107.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Drum/batch transfers - CS8.	Transfer via enclosed lines - E52.
Mixing operations (closed systems) - CS29.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Mixing operations (open systems) - CS30.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Mold forming - CS31.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Avoid carrying out activities involving exposure operation for more than 1 hour - OC27.
Casting operations - CS32.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60.
Spraying - CS10. Machine - CS33.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60.
Manual - CS34. Rolling, Brushing - CS51.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Spraying - CS10. Manual - CS34.	Carry out in a vented booth or extracted enclosure - E57. Avoid carrying out activities involving exposure operation for more than 4 hours - OC2.
Storage - CS67.	Store substance within a closed system - E84.
Storage - CS67. With occasional controlled exposure - CS140.	Store substance within a closed system - E84.
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year): - A1	50

Regional tonnage (ktonnes/year): - A2	5
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	1,00E+00
Release fraction to waste water from process: - OOC5	0.00003
Release fraction to soil from process (regional only): - OOC6	0,00E+00
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 (%): - TCR7	>80
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Soil emission controls are not applicable as there is no direct release to soil - TCR4.	
Prevent discharge of undissolved substance to or recover from onsite wastewater - TCR14.	
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Sludge should be incinerated, contained or reclaimed - OMS3.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% 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 464253 kg/day after RMM
Substance use	5 ktonns/year
On-site risk management measures	93.67% efficiency water, 80% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	0.003
Typical release to water after RMM	2.21E-03 mg/l

Section 1	**Exposure Scenario**
Title	**Use in binders and release agents - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 3, 4, 6, 8a, 8b, 10, 11, 14
Environmental Release Categories	8a, 8d
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**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - 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 more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Material transfers - CS3. (closed systems) - CS107.	Handle substance within a closed system - E47.
Material transfers - CS3. (closed systems) - CS107. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Material transfers - CS3. (closed systems) - CS107. Batch process - CS55.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Drum/batch transfers - CS8.	Use drum pumps or carefully pour from container - E64.
Mixing operations (closed systems) - CS29.	Formulate in enclosed or ventilated mixing vessels - E46. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Mixing operations (open systems) - CS30.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Mold forming - CS31.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Casting operations - CS32. (Open systems) - CS108.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.

Spraying - CS10. Machine - CS33.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Minimise exposure by extracted full enclosure for the operation or equipment - E61.
Manual roller application or brushing - CS13.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Provide extract ventilation to points where emissions occur - E54. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Spraying - CS10. Manual - CS34.	Carry out in a vented booth or extracted enclosure - E57. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Wear suitable gloves tested to EN374 - PPE15. Wear a respirator conforming to EN140 with Type A filter or better - PPE22.
Storage - CS67.	Store substance within a closed system - E84.
Storage - CS67. With occasional controlled exposure - CS140.	Store substance within a closed system - E84. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Section 2.2	**Control of environmental exposure**

Title	Use in binders and release agents - Professional

Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable.	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50
Regional tonnage (ktonnes/year): - A2	5
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	
Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.95
Release fraction to waste water from process: - OOC5	0.025
Release fraction to soil from process (regional only): - OOC6	0.025
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%): - TCR7	>0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization 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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	

4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% 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 1985 kg/day after RMM
Substance use	0.01 ktonns/year
On-site risk management measures	93.67% efficiency water, 0% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	2.5
Typical release to water after RMM	2.80E-03 mg/l
Section 1	**Exposure Scenario**
Title	**Use in fuels - Industrial**

Use Descriptor	
Sector of Use	3, 10
Process Categories	1, 2, 3, 4, 8a, 8b, 16
Environmental Release Categories	7
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**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - OC4
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) - G13.
Amounts used	Not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable
Other operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Bulk transfers - CS14.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Drum/batch transfers - CS8.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
General exposures (closed systems) - CS15.	No specific measures identified - EI18.
General exposures (closed systems) - CS15. With occasional controlled exposure - CS140.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
General exposures (closed systems) - CS15. Batch process - CS55.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
General exposures (open systems) - CS16. (closed systems) - CS107.	No specific measures identified - EI18.
General exposures (open systems) - CS16. (closed systems) - CS107. Batch process - CS55.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.

Equipment maintenance - CS5.	Drain down and flush system prior to equipment break-in or maintenance - E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle - ENVT4.
Vessel and container cleaning - CS103.	Provide extract ventilation to points where emissions occur - E54.
Storage - CS67.	No specific measures identified - EI18.
Storage - CS67. With occasional controlled exposure - CS140.	No specific measures identified - EI18.
Disposal of wastes - CS28.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year): - A1	50 ktoneladas/ano

Regional tonnage (ktonnes/year): - A2	5 ktoneladas/ano
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.005
Release fraction to waste water from process: - OOC5	0.00001
Release fraction to soil from process (regional only): - OOC6	0,00E+00
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 (%): - TCR7	>95
Typical onsite wastewater treatment technology provides removal efficiency: - TCR11	93.67
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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. 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.	

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 sediment
	Msafe 3639010 kg/day after RMM
Substance use	5 ktonnes/year
On-site risk management measures	93.67 % efficiency water, 95 % efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	0.001
Typical release to water after RMM	1.16E-03 mg/l

Section 1	**Exposure Scenario**
Title	**Use in Fuels - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 3, 4, 8a, 8b, 16
Environmental Release Categories	9A, 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**
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 ^{o}C above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Bulk transfers - CS14.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Drum/batch transfers - CS8.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Dipping, immersion and pouring - CS4.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
General exposures (closed systems) - CS15.	No specific measures identified - EI18.
General exposures (closed systems) - CS15. With occasional controlled exposure - CS140.	No specific measures identified - EI18. Avoid carrying out activities involving exposure for more than 4 hours - OC 28.
General exposures (open systems) - CS16. (closed systems) - CS107. Batch process - CS55.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
General exposures (open systems) - CS16. (closed systems) - CS107.	No specific measures identified - EI18.
Equipment cleaning and maintenance CS39.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.

Vessel and container cleaning - CS103.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Storage - CS67.	No specific measures identified - EI18.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A1	1 ktonnes/year
Regional tonnage (ktonnes/year): - A2	0.1 ktonnes/year
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	

Title	Use in Fuels - Professional

Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.001
Release fraction to waste water from process: - OOC5	0.00001
Release fraction to soil from process (regional only): - OOC6	0.00001
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 (%): - TCR7	>0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Prevent discharge of undissolved substance to or recover from wastewater - TCR14.	
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Sludge should be incinerated, contained or reclaimed - OMS3.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 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 93.67% which would be typically found in wastewater treatment plant.	
Values for Scaling Purposes	
DSU4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
	Environment

Basis for scaling	Risk-driving Compartment – Freshwater sediment
	Msafe 0.22 kg/day after RMM
Substance use	0.0002 ktonnes/year
On-site risk management measures	93.67 % 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	6.30E-04 mg/l
Section 1	**Exposure Scenario**
Title	**Use in polymer production - Industrial**

Use Descriptor	
Sector of Use	3, 10
Process Categories	1, 2, 3, 4, 5, 6, 8a, 8b, 9, 14, 21
Environmental Release Categories	4, 6c
Processes, tasks, activities covered	Manufacture of polymers from monomers in continuous and batch processes, include sparging, discharging, and reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing).
Section 2	**Operational conditions and risk management measures**
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**
General exposures (closed systems) - CS15. Continuous process - CS54. No sampling - CS57.	No specific measures identified - EI18.
Bulk transfers - CS14. Transport - CS58. With sample collection - CS56.	Ensure material transfers are under containment or extract ventilation - E66.
Polymerisation (bulk and batch) - CS65. Continuous process - CS54. With sample collection - CS56.	No specific measures identified - EI18.
Polymerisation (bulk and batch) - CS65. Batch process - CS55. With sample collection - CS56.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11 or G9. Ensure operation is undertaken outdoors - E69.
Finishing operations - CS102. Batch process - CS55. With sample collection - CS56. Catalyst inactivation and removal, washing and stripping/ distillation to remove unreacted monomer	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69.
Intermediate polymer storage - CS66.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69.
Additivation and stabilisation - CS69.	Provide extract ventilation to points where emissions occur - E54.
Mixing in containers - CS23. Batch process - CS55.	Provide extract ventilation to points where emissions occur - E54.
Pelletizing - CS53. Extrusion and masterbatching - CS88.	Provide extract ventilation to points where emissions occur - E54. Avoid carrying out activities involving exposure for more than 4 hours - OC 28.

Pelletizing - CS53.	Provide extract ventilation to points where emissions occur - E54.
Pelletisation and pellet screening - CS68. (open systems) - CS108.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Bulk transfers - CS14. Continuous process - CS54. With sample collection - CS56.	Provide a good standard of general or controlled ventilation (not less than 3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69.

Transport - CS58. With sample collection - CS56.	Ensure material transfers are under containment or extract ventilation - E66.
Equipment maintenance - CS5.	Drain down and flush system prior to equipment break-in or maintenance - E55.
Storage - CS67. With occasional controlled exposure - CS140.	No specific measures identified - EI18.
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year): - A!	1 ktonnes/year
Regional tonnage (ktonnes/year): - A2	0.1 ktonnes/year
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.01
Release fraction to waste water from process: - OOC5	0.003
Release fraction to soil from process (regional only): - OOC6	0.0001
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%): - TCR7	>80
Typical onsite wastewater treatment technology provides removal efficiency (%): - TCR11	93.67
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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 - ERW3.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated - ERW3.	
Other envirnonmental 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.	

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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in wastewater 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 16835 kg/day after RMM
Site use	0.1 ktonnes/year
On-site emission factors	93.67 % 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	6.30E-04 mg/l

Section 1	Exposure Scenario
Title	**Use in polymer processing - Industrial**

Use Descriptor	
Sector of Use	3, 10
Process Categories	1, 2, 3, 4, 5, 6, 8a, 8b, 9, 13, 14, 21
Environmental Release Categories	4
Processes, tasks, activities covered	Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.
Section 2	**Operational conditions and risk management measures**
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 > 20ºC above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Bulk transfers - CS14. (closed systems) - CS107.	Handle substance within a closed system - E47.
Bulk transfers - CS14. (closed systems) - CS107. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
Bulk transfers - CS14. Dedicated facility - CS81.	Transfer via enclosed lines - E52.
Bulk weighing - CS91. (closed systems) - CS107.	Handle substance within a closed system - E47.
Bulk weighing - CS91. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47.
Small scale weighing - CS90.	Ensure material transfers are under containment or extract ventilation - E66.
Additive premixing - CS92. (closed systems) - CS107.	Ensure material transfers are under containment or extract ventilation - E66.
Additive premixing - CS92. (open systems) - CS108. With sample collection - CS56.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Additive premixing - CS92. General exposures (open systems) - CS16.	Ensure material transfers are under containment or extract ventilation - E66.
Bulk transfers - CS14. Drum/batch transfers - CS8].	Transfer via enclosed lines - E52.
Bulk transfers - CS14. Small package filling - CS7.	Transfer via enclosed lines - E52.
Calendering (including Banburys) - CS64.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Production of articles by dipping and pouring - CS113.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Extrusion and masterbatching - CS88.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.

Injection moulding of articles - CS89.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Equipment maintenance - CS5.	Drain down system prior to equipment break-in or maintenance - E65.
Storage - CS67. With occasional controlled exposure - CS140.	Store substance within a closed system - E84.
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year): - A1	50 ktonnes/year
Regional tonnage (ktonnes/year): - A2	5 ktonnes/year
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.25
Release fraction to waste water from process: - OOC5	0
Release fraction to soil from process (regional only): - OOC6	0.00001

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 (%): - TCR7	>80
Typical onsite wastewater treatment technology provides removal efficiency: - TCR11	93.67%
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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 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 93.67% which would be typically found in wastewater 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 2525253 kg/day after RMM
Site use	5 ktonnes/year
On-site emission factors	93.67 % efficiency water, 80 % efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	0
Typical release to water after RMM	6.30E-04 mg/l

Section 1	Exposure Scenario
Title	**Use in polymer processing - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 8a, 8b, 14, 21
Environmental Release Categories	8a, 8d
Processes, tasks, activities covered	Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa - OC5.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) - G13.
Amounts used	Not applicable.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable
Other operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1].
Contributing Scenarios	**Risk Management Measures**
Bulk transfers - CS14. (closed systems) - CS107.	Handle substance within a closed system - E47.
Bulk transfers - CS14. (closed systems) - CS107. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Material transfers - CS3.	Transfer via enclosed lines - E52.
Injection moulding of articles - CS89.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60.
Rework of articles - CS86.	No specific measures identified - EI18.
Equipment maintenance - CS5.	Drain down system prior to equipment break-in or maintenance - E65. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Storage - CS67.	Handle substance within a closed system - E47. No specific measures identified - EI18.
Storage - CS67. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50 ktonnes/year
Regional tonnage (ktonnes/year): - A2	5 ktonnes/year
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	
Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process before RMMs: - OOC4	0.98

Title	Use in polymer processing - Professional

Release fraction to waste water from process before RMMs: - OOC5	0.01
Release fraction to soil from process before RMMs: - OOC6	0.01
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal (or abatement?) efficiency of (%): - TCR7	>0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 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 93.67% which would be typically found in wastewater treatment plant.	
Values for Scaling Purposes	
DSU4: Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Environment
	Risk-driving Compartment – Freshwater sediment
	Msafe 4628 kg/day after RMM
Site use	0.01 ktonnes/year
On-site emission factors	93.67 % efficiency water, 0 % efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	1
Typical release to water after RMM	1.50E-03 mg/l

Section 1	Exposure Scenario
Title	**Use in functional fluids - Industrial**

Use Descriptor	
Sector of Use	3, 8, 9
Process Categories	1, 2, 3, 4, 8a, 8b, 9
Environmental Release Categories	7
Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.
Section 2	**Operational conditions and risk management measures**
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**
Bulk transfers - CS14.	No specific measures identified - EI18.
Bulk transfers - CS14. With occasional controlled exposure - CS137.	No specific measures identified - EI18.
Bulk transfers - CS14. Batch process - CS55.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, OR G9. Ensure operation is undertaken outdoor - E69.
Bulk transfers - CS14.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, OR G9. Ensure operation is undertaken outdoor - E69.
Drum/batch transfers - CS8. Dedicated facility - CS81.	Ensure material transfers are under containment or extract ventilation - E66.
Pelletizing - CS53. (closed systems) - CS107.	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings - E60.
Filling / preparation of equipment from drums or containers - CS45.	Use drum pumps or carefully pour from container - E64.
General exposures (closed systems) - CS15.	No specific measures identified - EI18.
General exposures (open systems) - CS16.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, OR G9. Ensure operation is undertaken outdoor - E69. Provide extract ventilation to points where emissions occur - E54.
Remanufacture of reject articles - CS19.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, OR G9. Ensure operation is undertaken outdoor - E69. Provide extract ventilation to points where emissions occur - E54.
Equipment maintenance - CS5.	Drain down system prior to equipment break-in or maintenance - E65.
Storage - CS67.	No specific measures identified - EI18.
Storage - CS67. With occasional controlled exposure - CS137.	No specific measures identified - EI18.
Section 2.2	**Control of environmental exposure**
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 (ktonnes/year) - A1	1 ktonnes/year
Regional tonnage (ktonnes/year): - A2	0.1 ktonnes/year
Fraction of main local source: - A3	1
Frequency and duration of use	
Emission Days (days/year): - FD4	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: - OOC4	0.005
Release fraction to waste water from process: - OOC5	0.0003
Release fraction to soil from process (regional only): - OOC6	0.001
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 (%): - TCR7	>80
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
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.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d):- STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in wastewater treatment plant.	
Values for Scaling Purposes	

DSU4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Environment
	Risk-driving Compartment – Freshwater sediment
	Msafe 89.13 kg/day after RMM
Site use	0.1 ktonnes/year
On-site emission factors	93.67 % efficiency water, 0 % efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watER (before RMM)	0.03
Typical release to water after RMM	9.46E-04 mg/l

Section 1	**Exposure Scenario**
Title	**Use as a functional fluids - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 3, 8a, 9, 20
Environmental Release Categories	9A, 9B
Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.
Section 2	**Operational conditions and risk management measures**
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**
Drum/batch transfers - CS8. Non-dedicated facility - CS82.	Use drum pumps or carefully pour from container - E64. Avoid carrying out activities involving exposure for more than 4 hours - OC28.
Transfer from/pouring from containers - CS22.	Use drum pumps or carefully pour from container - E64. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). - E11, OR G9. Ensure activity is undertaken outdoors - E69.
Filling / preparation of equipment from drums or containers - CS45.	Use drum pumps or carefully pour from container - E64. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). - E11,OR G9. Ensure activity is undertaken outdoors - E69.
General exposures (closed systems) - CS15.	No specific measures identified - EI18.
General exposures (open systems) - CS16. At elevated temperature (product at 80oC)	Provide extract ventilation to points where emissions occur - E54.
Remanufacture of reject articles - CS19.	Drain down system prior to equipment break-in or maintenance - E65. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, OR G9. Ensure activity is undertaken outdoors - E69.
Equipment maintenance - CS5. Non-dedicated facility - CS82.	Drain down system prior to equipment break-in or maintenance - E65. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, OR G9. Ensure activity is undertaken outdoors - E69.

Storage - CS67. With occasional controlled exposure - CS140.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, OR G9. Ensure activity is undertaken outdoors - E69.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A!	1 ktonnes/year
Regional tonnage (ktonnes/year): - A2	0.1 ktonnes/year
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	

Title	Use as a functional fluids - Professional

Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.05
Release fraction to waste water from process: - OOC5	0.025
Release fraction to soil from process (regional only): - OOC6	0.025
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%): - TCR7	>0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 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 93.67% which would be typically found in wastewater treatment plant.	
Values for Scaling Purposes	
DSU4: Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Environment
	Risk-driving Compartment – Freshwater sediment
	Msafe 0.21 kg/day after RMM

Substance use	0.0002 ktonnes/year
On-site risk management measures	93.67 % 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	6.73E-04 mg/l

Section 1	**Exposure Scenario**
Title	**Use in oil field drilling and production operations - Industrial**

Use Descriptor	
Sector of Use	3, 10
Process Categories	1, 2, 3, 4, 8a, 8b
Environmental Release Categories	4
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**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - OC4.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) - G13.
Amounts used	Not applicable.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) - G2.
Human factors not influenced by risk management	Not applicable.
Other operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Bulk transfers - CS14.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving expsoure for more than 1 hour - OC27.
Filling / preparation of equipment from drums or containers - CS45.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving expsoure for more than 1 hour - OC27.
Drill floor operations - CS116.	Provide a good standard of general ventilation (not less than3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69.
Operation of solids filtering equipment-vapour exposures - CS118.	Provide a good standard of general ventilation (not less than3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69.
Operation of solids filtering equipment-aerosol exposures - CS119.	Provide a good standard of general ventilation (not less than3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69.
Operation of solids filtering equipment - CS117.	Provide a good standard of general ventilation (not less than3 to 5 air changes per hour) - E11, or G9. Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving expsoure for more than 1 hour - OC27.
Treatment and disposal of filtered solids - CS121.	Provide a good standard of general ventilation (not less than3 to 5 air changes per hour) - E11, or - G9. Ensure operation is undertaken outdoors - E69.
Process sampling - CS2.	Provide a good standard of general ventilation (not less than3 to 5 air changes per hour) - E11, or - G9. Ensure operation is undertaken outdoors - E69.
General exposures (closed systems) - CS15.	No specific measures identified - EI18.
Pouring from small containers - CS9.	Use drum pumps or carefully pour from container - E64.
General exposures (open systems) - CS16.	Provide a good standard of general ventilation (not less than3 to 5 air changes per hour) - E11, or - G9. Ensure operation is undertaken outdoors - E69.
Equipment cleaning and maintenance - CS39.	Use drum pumps or carefully pour from container - E64.
Batch process - CS55.	No specific measures identified - EI18.
Batch process - CS55. With occasional controlled exposure - CS140.	No specific measures identified - EI18.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log kow is 3.16 and is readily biodegradable.	

Amounts Used	
EU tonnage (ktonnes/year): - A1	1 ktonnes/year
Regional tonnage (ktonnes/year): - A2	0.1 ktonnes/year
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	
Emission Days (days/year): - FD4	300
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	Not applicable

Local marine water dilution factor	Not applicable
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	Not applicable
Release fraction to waste water from process: - OOC5	Not applicable
Release fraction to soil from process (regional only): - OOC6	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 - 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 envirnonmental control measures additional to above	
Not applicable.	
Basis for scaling	
Not applicable.	
Section 3	**Exposure Estimation**
3.1. Health	
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.	
3.2. Environment	
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.	
Section 4	**Guidance to check compliance with exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in waste water treatment plant.	

Section 1	**Exposure Scenario**
Title	**Use in oil field - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 3, 4, 8a, 8b
Environmental Release Categories	8D
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**
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**
Bulk transfers - CS14.	Transfer via enclosed lines - E52.
Filling / preparation of equipment from drums or containers - CS45.	Transfer via enclosed lines - E52.
Drill floor operations - CS116.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. OR Ensure operation is undertaken outdoors - E69.
Drill floor operations - CS116.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. OR Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Operation of solids filtering equipment - vapour exposures - CS118.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Operation of solids filtering equipment - aerosol exposures - CS119.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40.
Operation of solids filtering equipment - CS117.	Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour) - E40. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Treatment and disposal of filtered solids - CS121.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. OR Ensure operation is undertaken outdoors - E69.
Process sampling - CS2.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. OR Ensure operation is undertaken outdoors - E69.
General exposures (closed systems) - CS15.	No specific measures identified - EI18.
Pouring from small containers - CS9.	Use drum pumps or carefully pour from container - E64. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. OR Ensure operation is undertaken outdoors - E69.
General exposures (open systems) - CS16.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. OR Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Equipment cleaning and maintenance CS39.	Drain down and flush system prior to equipment break-in or maintenance - E55.

Title	**Use in oil field - Professional**

Batch process - CS55.	No specific measures identified - EI18.
Batch process - CS55. With occasional controlled exposure - CS140.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. OR Ensure operation is undertaken outdoors - E69. No specific measures identified - EI18.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A1	1 ktonnes/year
Regional tonnage (ktonnes/year): - A2	0.1 ktonnes/year
Fraction of main local source: - A3	Not applicable
Frequency and duration of use	
Emission Days (days/year): - FD4	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)	
Organization measures to prevent/limit release from site	
Prevent environmental discharge consistent with regulatory requirements - OMS4.	
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 - 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 envirnonmental control measures additional to above	
Not applicable.	
Basis for scaling	
Not applicable.	
Section 3	**Exposure Estimation**
3.1. Health	
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.	
3.2. Environment	
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.	
Section 4	**Guidance to check compliance with 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 93.67% which would be typically found in wastewater treatment plant.	

Section 1	Exposure Scenario
Title	**Use in laboratory - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	10, 15
Environmental Release Categories	4
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**
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**
Laboratory activities - CS36. Small scale - CS61. Fume-cupboard Activity - CS139.	No specific measures identified - EI18.
Cleaning - CS47. Rolling, Brushing - CS51. Vessel and container cleaning - CS103.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Handle in a fume cupboard or under extract ventilation - E83.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year): - A1	1 ktonnes/year
Regional tonnage (ktonnes/year): - A2	0.1 ktonnes/year
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	
Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.5
Release fraction to waste water from process: - OOC5	0.5
Release fraction to soil from process (regional only): - OOC6	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 (%): - TCR7	>0

Title	**Use in laboratory - Professional**

Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Soil emission controls are not applicable as there is no direct release to soil - TCR4.	
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 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	
DSU4 : Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Ambiente
	Risk-driving Compartment – Freshwater sediment
	Msafe 0.09 kg/day after RMM
Substance use	0.0002 ktonnes/year
On-site risk management measures	93.67 % efficiency water, 0 % efficiency air
Dilution factors	Freshwater: 10
	Marine water:100
Initial release percent at site to watre (before RMM)	50
Typical release to water after RMM	1.50E-03 mg/l

Section 1	Exposure Scenario
Title	**Use in agrochemicals - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	1, 2, 4, 8a, 8b, 11, 13
Environmental Release Categories	8A, 8D
Processes, tasks, activities covered	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP - 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 more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Transfer from/pouring from containers - CS22.	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) - E40.
Mixing in containers - CS23.	Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 1 hour - OC27.
Spraying/fogging by manual application - CS24.	Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 4 hours - OC28. Wear suitable gloves tested to EN374 - PPE15. Wear a full face respirator conforming to EN140 with Type A filter or better - PPE24.
Spraying/fogging by machine application - CS25.	Limit the substance content in the product to 25% - OC18. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 - E70. Wear suitable gloves tested to EN374 - PPE15.
Ad hoc manual application via trigger sprays, dipping, etc. - CS27.	Limit the substance content in the product to 25% - OC18. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11. Avoid carrying out activities involving exposure for more than 1 hour - OC27. Wear suitable gloves tested to EN374 - PPE15.
Clean down and maintenance - CS26. Nondedicated facility - CS82.	Avoid carrying out activities involving exposure for more than 1 hour - OC27. Wear suitable gloves tested to EN374 - PPE15.
Disposal of wastes - CS28. Non dedicated facility - CS82.	Drain down system prior to equipment break-in or maintenance - E65. Ensure operation is undertaken outdoors - E69. Avoid carrying out activities involving exposure for more than 1 hour - OC27. Wear suitable gloves tested to EN374 - PPE15.
Storage - CS67.	Handle substance within a closed system - E47.
Storage - CS67. With occasional controlled exposure - CS140.	Handle substance within a closed system - E47. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) - E11.
Section 2.2	**Control of environmental exposure**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable.	
Amounts Used	
EU tonnage (ktonnes/year): - A1	50
Regional tonnage (ktonnes/year): - A2	5
Fraction of main local source: - A3	2.00E-3
Frequency and duration of use	

Title	Use in agrochemicals - Professional

Emission Days (days/year): - FD4	**365**
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	**10**
Local marine water dilution factor	**100**
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.9
Release fraction to waste water from process: - OOC5	0.01
Release fraction to soil from process (regional only): - OOC6	0.09
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 (%): - TCR7	>0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization 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 (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% 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 Sediment
	Msafe 4628 kg/day after RMM

Title	**Use in road and constructions - Professional**

Substance use	0.01 ktonns/year
On-site risk management measures	93.67% efficiency water, 0% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	1
Typical release to water after RMM	1.50E-03 mg/l

Section 1	**Exposure Scenario**
Title	**Use in road and constructions - Professional**

Use Descriptor	
Sector of Use	22
Process Categories	7, 8a, 8b, 9, 10, 11, 13
Environmental Release Categories	8D, 8F
Processes, tasks, activities covered	Application of surface coatings and binders in road and construction activities, including paving uses, manual mastic and in the application of roofing and water-proofing membranes.
Section 2	**Operational conditions and risk management measures**
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 more than 20°C above ambient temperature, unless stated differently - G15.
	Assumes a good basic standard of occupational hygiene is implemented - G1.
Contributing Scenarios	**Risk Management Measures**
Drum/batch transfers - CS8. Non-dedicated facility - CS82.	Use drum pumps or carefully pour from container [E64].Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].
Drum/batch transfers - CS8. Dedicated facility - CS81.	Ensure material transfers are under containment or extract ventilation [E66]. ; Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].
Manual roller application or brushing - CS13.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Spraying/fogging by machine application - CS25.	Ensure operation is undertaken outdoors [E69]. ; Provide extract ventilation to points where emissions occur [E54], OR; [G9], Operate away from sources of substance emission or release [E77]. Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Dipping, immersion and pouring - CS4.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Equipment cleaning and maintenance CS39.	Drain down and flush system prior to equipment break-in or maintenance [E55].Provide extract ventilation to points where emissions occur [E54], OR; [G9], Operate away from sources of substance emission or release [E77]. Retain drain downs in sealed storage pending disposal or for subsequent recycle [ENVT4].
Storage - CS67.	No specific measures identified [EI18].
Storage - CS67. With occasional controlled exposure - CS140.	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11], OR: [G9] Ensure activity is undertaken outdoors [E69].
Section 2.2	**Control of environmental exposure**

Title	**Use in road and constructions - Professional**
Product characteristics	
The Xylenes category consists of liquids of medium volatility. The water solubility for the category is 166mg/l; the vapour pressure is 821 Pa at 20°C; and the log Kow is 3.16 and is readily biodegradable	
Amounts Used	
EU tonnage (ktonnes/year)_ - A1	1
Regional tonnage (ktonnes/year): - A2	0.1
Fraction of main local source: - A3	2.00E-03
Frequency and duration of use	
Emission Days (days/year): - FD4	365
Environmental Factors not influenced by risk management	
Local Freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process: - OOC4	0.95
Release fraction to waste water from process: - OOC5	0.01
Release fraction to soil from process (regional only): - OOC6	0.04
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 (%): - TCR7	> 0
Typical onsite wastewater treatment technology provides removal efficiency of (%): - TCR11	93.67
Organization measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils - OMS2.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%): - STP3	93.67
Assumed domestic sewage treatment plant flow (m3/d): - STP5	2000
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 envirnonmental 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.	
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 exposure Scenario**
4.1. Health	
Confirm that RMMs and OCs are as described or of equivalent efficiency.	
4.2. Environment	

Title	**Use in road and constructions - Professional**
Confirm that RMMs and OCs are as described or of equivalent efficiency. The required efficiency removal from water is 93.67% which would be typically found in waste-water treatment plant.	
Values for Scaling Purposes	
DSU4: Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Basis for scaling	Environment
	Risk-driving Compartment- Freshwater sediment
	Msafe 0.21 kg/day after RMM

Substance use	0.0002 ktonns/year
On-site risk management measures	93.67% efficiency water, 0% efficiency air
Dilution factors	Freshwater: 10
	Marine water: 100
Initial release percent at site to watre (before RMM)	1
Typical release to water after RMM	6.47E-04 mg/l