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

1.1 Product identifier

Trade name	:	Aldirez A
REACH Registration Number	:	01-2119899874-11-XXXX
Substance name	:	1,3-Cyclohexanedimethanamine, N1,N3-bis(2-methylpropylidene)
EC-No.	:	619-764-7

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

Product use	:	Primer

1.3 Details of the supplier of the safety data sheet

Company name of supplier	:	Incorez Limited, Miller Street, Preston, Lancashire PR1 1EA United Kingdom
Telephone	:	+44 (0)1772 201964
E-mail address of person responsible for the SDS	:	sds@incorez.com

1.4 Emergency telephone number

+44 (0)870 1906777

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin corrosion, Sub-category 1C	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Long-term (chronic) aquatic hazard, Category 3	H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word	:	Danger	
Hazard statements	:	H314	Causes severe skin burns and eye damage.
		H317	May cause an allergic skin reaction.
		H412	Harmful to aquatic life with long lasting effects.
Precautionary statements	:	**Prevention:**	
		P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
		P273	Avoid release to the environment.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
		Response:	
		P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
		P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
		P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical nature : Amines

Components

Chemical name	CAS-No. EC-No. Registration number	Concentration (% w/w)
1,3-Cyclohexanedimethanamine, N1,N3-bis(2-methylpropylidene)	173904-11-5 619-764-7 01-2119899874-11-XXXX	100

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.

If swallowed : Do not induce vomiting without medical advice.
Rinse mouth with water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Allergic reactions
Dermatitis
See Section 11 for more detailed information on health effects and symptoms.

Risks : Health injuries may be delayed.
corrosive effects
sensitising effects

May cause an allergic skin reaction.
Causes serious eye damage.
Causes severe burns.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : In case of fire, use water/water spray/water jet/carbon diox-

ide/sand/foam/alcohol resistant foam/chemical powder for extinction.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products : No hazardous combustion products are known

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

Further information : Standard procedure for chemical fires.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Deny access to unprotected persons.

6.2 Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Do not breathe vapours or spray mist.
Avoid exceeding the given occupational exposure limits (see section 8).
Do not get in eyes, on skin, or on clothing.
For personal protection see section 8.
Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Smoking, eating and drinking should be prohibited in the ap-

plication area.
Follow standard hygiene measures when handling chemical products

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully re-sealed and kept upright to prevent leakage. Store in accordance with local regulations.

Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s) : Consult most current local Product Data Sheet prior to any use.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
1,3-Cyclohexanedimethanamine, N1,N3-bis(2-methylpropylidene)	Workers	Inhalation	Long-term systemic effects	17,9 mg/m3
	Workers	Skin contact	Long-term systemic effects	5,07 mg/kg
	Consumers	Inhalation	Long-term systemic effects	3,81 mg/m3
	Consumers	Skin contact	Long-term systemic effects	2,54 mg/kg
	Consumers	Ingestion	Long-term systemic effects	2,54 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
1,3-Cyclohexanedimethanamine, N1,N3-bis(2-methylpropylidene)	Fresh water	0,015 mg/l
	Marine water	0,0015 mg/l
	Fresh water sediment	6,6 mg/kg
	Marine sediment	0,66 mg/kg
	Soil	1,23 mg/kg

8.2 Exposure controls

Personal protective equipment

Eye protection	:	Safety glasses with side-shields conforming to EN166 Eye wash bottle with pure water Wear eye/face protection.
Hand protection	:	Chemical-resistant, impervious gloves complying with an approved standard must be worn at all times when handling chemical products. Reference number EN 374. Follow manufacturer specifications. Suitable for short time use or protection against splashes: Butyl rubber/nitrile rubber gloves (0,4 mm) Contaminated gloves should be removed. Suitable for permanent exposure: Viton gloves (0.4 mm), breakthrough time >30 min.
Skin and body protection	:	Protective clothing (e.g. Safety shoes acc. to EN ISO 20345, long-sleeved working clothing, long trousers). Rubber aprons and protective boots are additionaly recommended for mixing and stirring work.
Respiratory protection	:	No special measures required.

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	liquid
Colour	:	light yellow
Odour	:	amine-like
Odour Threshold	:	No data available
pH	:	Not applicable
Melting point/range / Freezing point	:	No data available
Boiling point/boiling range	:	ca. 232 °C
Flash point	:	81 °C Method: closed cup

Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Self ignition temperature	:	239 °C
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	0,01 hPa
Relative vapour density	:	ca. 1
Density	:	ca. 0,9 g/cm3 (20 °C)
Solubility(ies)		
Water solubility	:	insoluble
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	> 7 mm2/s (40 °C)
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under recommended storage conditions.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : No data available

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not classified based on available information.

Components:

1,3-Cyclohexanedimethanamine, N1,N3-bis(2-methylpropylidene):

Acute oral toxicity : LD50 Oral (Rat): > 2.000 mg/kg

Acute dermal toxicity : LD50 Dermal (Rabbit): > 2.000 mg/kg

Skin corrosion/irritation

Causes severe burns.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

Not classified based on available information.

Aspiration toxicity

Not classified based on available information.

SECTION 12: Ecological information

12.1 Toxicity

Components:

1,3-Cyclohexanedimethanamine, N1,N3-bis(2-methylpropylidene):

Toxicity to fish	:	LC50 (Fish): 68,79 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia (water flea)): 68,79 mg/l Exposure time: 48 h
Toxicity to algae	:	(Desmodesmus subspicatus (green algae)): 14,8 mg/l Exposure time: 72 h

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Other adverse effects

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	The generation of waste should be avoided or minimized wherever possible.

Empty containers or liners may retain some product residues.
This material and its container must be disposed of in a safe way.
Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.
Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

European Waste Catalogue : 08 01 11* waste paint and varnish containing organic solvents or other dangerous substances

Contaminated packaging : 15 01 10* packaging containing residues of or contaminated by dangerous substances

SECTION 14: Transport information

14.1 UN number

ADR : UN 3066

IMDG : UN 3066

IATA : UN 3066

14.2 UN proper shipping name

ADR : PAINT RELATED MATERIAL

IMDG : PAINT RELATED MATERIAL

IATA : Paint related material

14.3 Transport hazard class(es)

ADR : 8

IMDG : 8

IATA : 8

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	C9
Hazard Identification Number	:	80
Labels	:	8
Tunnel restriction code	:	(E)
Remarks	:	Transport according to chapter 3.4 (LQ) possible

IMDG

Packing group	:	III

Labels	:	8
EmS Code	:	F-A, S-B
Remarks	:	Alkalis

IATA (Cargo)

Packing instruction (cargo aircraft)	:	856
Packing instruction (LQ)	:	Y841
Packing group	:	III
Labels	:	Corrosives

IATA (Passenger)

Packing instruction (passenger aircraft)	:	852
Packing instruction (LQ)	:	Y841
Packing group	:	III
Labels	:	Corrosives

14.5 Environmental hazards

ADR

Environmentally hazardous : no

IMDG

Marine pollutant : no

IATA (Passenger)

Environmentally hazardous : no

IATA (Cargo)

Environmentally hazardous : no

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors	:	Not applicable
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	None of the components are listed (=> 0.1 %).
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants	:	Not applicable
Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals	:	Not applicable
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)	:	Conditions of restriction for the following entries should be considered: Number on list 3

REACH Information: All substances contained in our Products are
- registered by our upstream suppliers, and/or
- registered by us, and/or
- excluded from the regulation, and/or
- exempted from the registration.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Not applicable

Volatile organic compounds	:	Law on the incentive tax for volatile organic compounds (VOCV) no VOC duties Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) Not applicable

If other regulatory information applies that is not already provided elsewhere in the Safety Data Sheet, then it is described in this subsection.

Health, safety and environmental regulation/legislation specific for the substance or mixture:	:	Environmental Protection Act 1990 & Subsidiary Regulations Health and Safety at Work Act 1974 & Subsidiary Regulations Control of Substances Hazardous to Health Regulations (COSHH) May be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments.

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance by the supplier.

SECTION 16: Other information

Full text of other abbreviations

ADR	:	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	:	Chemical Abstracts Service
DNEL	:	Derived no-effect level

EC50	:	Half maximal effective concentration
GHS	:	Globally Harmonized System
IATA	:	International Air Transport Association
IMDG	:	International Maritime Code for Dangerous Goods
LD50	:	Median lethal dosis (the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals)
LC50	:	Median lethal concentration (concentrations of the chemical in air that kills 50% of the test animals during the observation period)
MARPOL	:	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
OEL	:	Occupational Exposure Limit
PBT	:	Persistent, bioaccumulative and toxic
PNEC	:	Predicted no effect concentration
REACH	:	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency
SVHC	:	Substances of Very High Concern
vPvB	:	Very persistent and very bioaccumulative

Further information

The information contained in this Safety Data Sheet corresponds to our level of knowledge at the time of publication. All warranties are excluded. Our most current General Sales Conditions shall apply. Please consult the product data sheet prior to any use and processing.

Changes as compared to previous version !

GB / EN

Annex to the extended safety data sheet (eSDS)

1. Overview of exposure scenarios (ES)

ES number	**ES Code**	Scenario name	Use descriptor	Page
1	1	Industrial manufacture of the substance	ERC 1; PROC 1, 2, 3, 4, 8B, 9	14
2	2	Formulation of sealants and adhesives	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9	24
3	3	Formulation of coatings and fillers	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9	35
4	4	Formulation of polymer preparations	ERC 3; PROC 2, 3, 4, 5, 8A, 8B, 9	46
5	5	Industrial application of sealants and adhesives	ERC 5; PROC 5, 7, 8B, 10, 14	57

ES number	ES Code	Scenario name	Use descriptor	Page
6	6	Industrial application of coatings and fillers	ERC 5; PROC 5, 7, 8B, 10, 13	69
7	7	Professional application of sealants and adhesives (indoor)	ERC 8C; PROC 5, 8A, 10, 11, 14	80
8	8	Professional application of sealants and adhesives (outdoor)	ERC 8F; PROC 5, 8A, 10, 11, 14	88
9	9	Professional application of coatings and fillers (indoor)	ERC 8C; PROC 5, 8A, 10, 11, 13	96
10	10	Professional application of coatings and fillers (outdoor)	ERC 8F; PROC 5, 8A, 10, 11, 13	104
11	11	Consumer use of sealants and adhesives (indoor)	ERC 8C; PC 1	113
12	12	Consumer use of sealants and adhesives (outdoor)	ERC 8F; PC 1	118
13	13	Consumer use of coatings and fillers (indoor)	ERC 8C; PC 9a, 9b	124
14	14	Consumer use of coatings and fillers (outdoor)	ERC 8F; PC 9a, 9b	129

1.1 General information

Human health - Worker

Acute/short term exposure
Peak exposure is considered to be not relevant for the identified use scenarios. Thus, the occupational conditions (OC) and risk management measures (RMM) which have been implemented to control long term exposure are also sufficient to control acute/short term exposure. Consequently, a quantitative assessment of acute/short term exposure and the subsequent risk assessment are not needed and have not been included in the exposure scenarios.

Long term exposure
A quantitative risk assessment has been performed in chapter 9 and 10 for those exposure scenarios for which a DNEL has been derived, i.e. systemic effects after long term inhalation and dermal exposure. As DNELs for local dermal sensitising and corrosive effects could not be established on the basis of the existing data, the risk arising from these effects can only be assessed qualitatively. Due to its skin sensitizing and corrosive properties the substance has been assigned to the “high hazard category”. The PROC-specific OCs and RMMs, which are listed in the chapter 9 tables describing the exposure scenarios, have been selected in line with the recommendations given in the ECHA Guidance on IR&CSR, Part E for this category. They are found to provide adequate control. If the manufacturer/user complies with these conditions and measurements the likelihood of effects due to the skin sensitization and corrosive potential of the substance is avoided.

Human health - Consumer

The substance is used in consumer products. Therefore, a qualitative exposure/risk assessment for the general population is conducted. Selected default scenarios from the ConsExpo fact sheet “Do-it-yourself products” were used as a worst-case scenario for inhalation and dermal exposure.

Environment

In the absence of experimentally-derived toxicity data and due to the adsorption properties of the substance the RCRs for Freshwater sediment, Marine water sediment, soil were increased by a factor of 10 as the equilibrium partitioning method was applied for the PNEC derivation.

2.1 Scenario 1: Industrial manufacture of the substance

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 1

Free short title	Industrial manufacture of the substance
Systematic title based on use descriptor	ERC 1; PROC 1, 2, 3, 4, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 1 Production of chemicals
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

2.2 Conditions of use affecting exposure

2.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 1

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	20 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	5 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0.010 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	

Fraction released to waste water (Femis.water)	0 % *(justification: All waste solvents will be sent to disposal companies. Water of reaction is distilled off and it is unlikely that this will contain appreciable amounts of the substance or its degradation products. Local STP will get unintentional spillages or washings only.)*

2.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.3 Exposure estimation

2.3.1 Contributing Scenario (1) controlling environmental exposure for ERC1
Industrial manufacture of the substance

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

2.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	6.76E-8 mg/L	0.015 mg/L	4.51E-6
Freshwater sediment	0.000912 mg/kg_{dwt}	6.6 mg/kg_{dwt}	0.001382
Marine water	8.13E-9 mg/L	0.0015 mg/L	5.42E-6
Marine water sediment	0.00011 mg/kg_{dwt}	0.660 mg/kg_{dwt}	0.001663

2.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.047259 mg/kg_{dwt}	1.23 mg/kg_{dwt}	0.038422

2.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0 mg/L	9.5 mg/L	0

2.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.006857 mg/kg bw/day	10.15 mg/kg bw/day	0.000676
inhalation, longterm systemic	0.104342 mg/m³	17.9 mg/m³	0.005829
Combined routes	0.021763 mg/kg bw/day	-	0.006505

2.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 2
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.274286 mg/kg bw/day	10.15 mg/kg bw/day	0.027023
inhalation, longterm systemic	10.434 mg/m³	17.9 mg/m³	0.582914
Combined routes	1.765 mg/kg bw/day	-	0.609938

2.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 3
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.137143 mg/kg bw/day	10.15 mg/kg bw/day	0.013512
inhalation, longterm systemic	3.13 mg/m³	17.9 mg/m³	0.174874
Combined routes	0.584321 mg/kg bw/day	-	0.188386

2.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 4
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

2.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8B
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	2.609 mg/m³	17.9 mg/m³	0.145729
Combined routes	3.116 mg/kg bw/day	-	0.415961

2.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 9
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

3.1 Scenario 2: Formulation of sealants and adhesives

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 2

Free short title	Formulation of sealants and adhesives
Systematic title based on use descriptor	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

3.2 Conditions of use affecting exposure

3.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 2

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	3.6 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	UserDefined_FEICA SPERC 2.1c.v2 (User-defined SpERC in accordance with the correspondent SpERC Fact Sheet (Reference: Date February 2013) provided by the association FEICA. For RMM specifications please refer to the correspondent SpERC factsheet.)

3.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure

Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.3 Exposure estimation

3.3.1 Contributing Scenario (1) controlling environmental exposure for ERC2
Formulation of sealants and adhesives

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

3.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	6.76E-8 mg/L	0.015 mg/L	4.51E-6
Freshwater sediment	0.000912 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.001382
Marine water	8.13E-9 mg/L	0.0015 mg/L	5.42E-6
Marine water sediment	0.00011 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.001663

3.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.034028 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.027665

3.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0 mg/L	9.5 mg/L	0

3.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.274286 mg/kg bw/day	10.15 mg/kg bw/day	0.027023
inhalation, longterm systemic	10.434 mg/m³	17.9 mg/m³	0.582914
Combined routes	1.765 mg/kg bw/day	-	0.609938

3.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.137143 mg/kg bw/day	10.15 mg/kg bw/day	0.013512
inhalation, longterm systemic	3.13 mg/m³	17.9 mg/m³	0.174874
Combined routes	0.584321 mg/kg bw/day	-	0.188386

3.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

3.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	3.488 mg/kg bw/day	-	0.561689

3.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	10.434 mg/m³	17.9 mg/m³	0.582914
Combined routes	4.233 mg/kg bw/day	-	0.853147

3.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	2.609 mg/m³	17.9 mg/m³	0.145729
Combined routes	3.116 mg/kg bw/day	-	0.415961

3.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

4.1 Scenario 3: Formulation of coatings and fillers

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 3

Free short title	Formulation of coatings and fillers
Systematic title based on use descriptor	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

4.2 Conditions of use affecting exposure

4.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 2

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	225 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.600 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	CEPE SPERC 2.1b1.v1 - CEPE - Formulation of Organic Solvent Borne Coatings and Inks - Small Scale (<100 tpa solvent use) - VOC

4.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.3 Exposure estimation

4.3.1 Contributing Scenario (1) controlling environmental exposure for ERC2
Formulation of coatings and fillers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

4.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC
Freshwater	6.76E-8 mg/L	0.015 mg/L	4.51E-6
Freshwater sediment	0.000912 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.001382
Marine water	8.13E-9 mg/L	0.0015 mg/L	5.42E-6
Marine water sediment	0.00011 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.001663

4.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC
Agricultural soil	0.005675 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.004614

4.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC
STP	0 mg/L	9.5 mg/L	0

4.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg bw/day	10.15 mg/kg bw/day	0.027023
inhalation, longterm systemic	10.434 mg/m³	17.9 mg/m³	0.582914
Combined routes	1.765 mg/kg bw/day	-	0.609938

4.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.137143 mg/kg bw/day	10.15 mg/kg bw/day	0.013512
inhalation, longterm systemic	3.13 mg/m³	17.9 mg/m³	0.174874
Combined routes	0.584321 mg/kg bw/day	-	0.188386

4.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

4.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	3.488 mg/kg bw/day	-	0.561689

4.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	10.434 mg/m³	17.9 mg/m³	0.582914
Combined routes	4.233 mg/kg bw/day	-	0.853147

4.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	2.609 mg/m³	17.9 mg/m³	0.145729
Combined routes	3.116 mg/kg bw/day	-	0.415961

4.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

5.1 Scenario 4: Formulation of polymer preparations

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 4

Free short title	Formulation of polymer preparations
Systematic title based on use descriptor	ERC 3; PROC 2, 3, 4, 5, 8A, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 3 Formulation in articles
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

5.2 Conditions of use affecting exposure

5.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 3

Operational conditions	
Annual site tonnage	99 to/year
-	
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	3.6 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	

SpERC	UserDefined_CEPE SPERC 2.1b.v1_analogue (User-defined SpERC with release fractions in analogy to the formulation SpERC provided by CEPE (CEPE SPERC 2.1b.v1 (Reference: AJN/ajns0319b, Date: 16 October 2010)) and FEICA (FEICA SPERC 2.1c.v2 (Reference:Reference Date February 2013)). For details on these SpERCs and the appropriate risk management measures (RMMs) please refer to the corresponding SpERC factsheets published by the associations CEPE and FEICA.)

5.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	

Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.3 Exposure estimation

5.3.1 Contributing Scenario (1) controlling environmental exposure for ERC3
Formulation of polymer preparations

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

5.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC
Freshwater	6.76E-8 mg/L	0.015 mg/L	4.51E-6
Freshwater sediment	0.000912 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.001382
Marine water	8.13E-9 mg/L	0.0015 mg/L	5.42E-6
Marine water sediment	0.00011 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.001663

5.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC
Agricultural soil	0.034028 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.027665

5.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC
STP	0 mg/L	9.5 mg/L	0

5.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg bw/day	10.15 mg/kg bw/day	0.027023
inhalation, longterm systemic	10.434 mg/m³	17.9 mg/m³	0.582914
Combined routes	1.765 mg/kg bw/day	-	0.609938

5.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.137143 mg/kg bw/day	10.15 mg/kg bw/day	0.013512
inhalation, longterm systemic	3.13 mg/m³	17.9 mg/m³	0.174874
Combined routes	0.584321 mg/kg bw/day	-	0.188386

5.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

5.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	3.488 mg/kg bw/day	-	0.561689

5.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	10.434 mg/m³	17.9 mg/m³	0.582914
Combined routes	4.233 mg/kg bw/day	-	0.853147

5.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg bw/day	10.15 mg/kg bw/day	0.270232
inhalation, longterm systemic	2.609 mg/m³	17.9 mg/m³	0.145729
Combined routes	3.116 mg/kg bw/day	-	0.415961

5.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic	5.217 mg/m³	17.9 mg/m³	0.291457
Combined routes	2.117 mg/kg bw/day	-	0.426573

6.1 Scenario 5: Industrial application of sealants and adhesives

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 5

Free short title	Industrial application of sealants and adhesives
Systematic title based on use descriptor	ERC 5; PROC 5, 7, 8B, 10, 14
Name of constributing environmental scenario and corresponding ERC	ERC 5 Industrial use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 7 - Industrial spraying PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 10 - Roller application or brushing PROC 10 - Roller application or brushing PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

6.2 Conditions of use affecting exposure

6.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 5

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	1.7 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	FEICA SPERC 5.1b.v1 - FEICA - Industrial Use of Substances other than Solvents in Transportation (Automotive/aircraft/rail vehicles) / industrial Building Construction Adhesives

6.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

6.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	360 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 360 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

6.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	180 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 180 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

6.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.3 Exposure estimation

6.3.1 Contributing Scenario (1) controlling environmental exposure for ERC5
Industrial application of sealants and adhesives

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

6.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC
Freshwater	6.76E-8 mg/L	0.015 mg/L	4.51E-6
Freshwater sediment	0.000912 mg/kg_{dwt}	6.6 mg/kg_{dwt}	0.001382
Marine water	8.13E-9 mg/L	0.0015 mg/L	5.42E-6
Marine water sediment	0.00011 mg/kg_{dwt}	0.660 mg/kg_{dwt}	0.001663

6.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC
Agricultural soil	0.016071 mg/kg_{dwt}	1.23 mg/kg_{dwt}	0.013066

6.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC
STP	0 mg/L	9.5 mg/L	0

6.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	13.043 mg/m³	17.9 mg/m³	0.728643
Combined routes	2.549 mg/kg bw/day	-	0.796201

6.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.143 mg/kg bw/day	10.15 mg/kg bw/day	0.211119
inhalation, longterm systemic	7.826 mg/m³	17.9 mg/m³	0.437186
Combined routes	3.261 mg/kg bw/day	-	0.648305

6.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.071 mg/kg bw/day	10.15 mg/kg bw/day	0.105559
inhalation, longterm systemic	15.651 mg/m³	17.9 mg/m³	0.874372
Combined routes	3.307 mg/kg bw/day	-	0.979931

6.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	13.043 mg/m³	17.9 mg/m³	0.728643
Combined routes	2.549 mg/kg bw/day	-	0.796201

6.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.514286 mg/kg bw/day	10.15 mg/kg bw/day	0.050669
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	16 mg/m³	17.9 mg/m³	0.893855
Combined routes	2.8 mg/kg bw/day	-	0.944523

6.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 10
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.257143 mg/kg bw/day	10.15 mg/kg bw/day	0.025334
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	14 mg/m³	17.9 mg/m³	0.782123
Combined routes	2.257 mg/kg bw/day	-	0.807457

6.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 14
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.171429 mg/kg bw/day	10.15 mg/kg bw/day	0.01689
inhalation, longterm systemic	13.043 mg/m³	17.9 mg/m³	0.728643
Combined routes	2.035 mg/kg bw/day	-	0.745532

7.1 Scenario 6: Industrial application of coatings and fillers

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 6

Free short title	Industrial application of coatings and fillers
Systematic title based on use descriptor	ERC 5; PROC 5, 7, 8B, 10, 13
Name of constributing environmental scenario and corresponding ERC	ERC 5 Industrial use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 7 - Industrial spraying PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 10 - Roller application or brushing PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring

7.2 Conditions of use affecting exposure

7.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 5

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	225 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	2 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	

SpERC	CEPE SPERC 5.1a.v1 - CEPE - application - industrial - spraying - indoor use - solids

7.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

7.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	360 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 360 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	enhanced (70%)
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

7.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	180 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 180 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

7.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	300 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 300 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.3 Exposure estimation

7.3.1 Contributing Scenario (1) controlling environmental exposure for ERC5
Industrial application of coatings and fillers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

7.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	6.76E-8 mg/L	0.015 mg/L	4.51E-6
Freshwater sediment	0.000912 mg/kg_{dwt}	6.6 mg/kg_{dwt}	0.001382
Marine water	8.13E-9 mg/L	0.0015 mg/L	5.42E-6
Marine water sediment	0.00011 mg/kg_{dwt}	0.660 mg/kg_{dwt}	0.001663

7.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.018906 mg/kg_{dwt}	1.23 mg/kg_{dwt}	0.015371

7.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0 mg/L	9.5 mg/L	0

7.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	13.043 mg/m³	17.9 mg/m³	0.728643
Combined routes	2.549 mg/kg bw/day	-	0.796201

7.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.143 mg/kg bw/day	10.15 mg/kg bw/day	0.211119
inhalation, longterm systemic	7.826 mg/m³	17.9 mg/m³	0.437186
Combined routes	3.261 mg/kg bw/day	-	0.648305

7.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.071 mg/kg bw/day	10.15 mg/kg bw/day	0.105559
inhalation, longterm systemic	15.651 mg/m³	17.9 mg/m³	0.874372
Combined routes	3.307 mg/kg bw/day	-	0.979931

7.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	13.043 mg/m³	17.9 mg/m³	0.728643
Combined routes	2.549 mg/kg bw/day	-	0.796201

7.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.514286 mg/kg bw/day	10.15 mg/kg bw/day	0.050669
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	16 mg/m³	17.9 mg/m³	0.893855
Combined routes	2.8 mg/kg bw/day	-	0.944523

7.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 10
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.257143 mg/kg bw/day	10.15 mg/kg bw/day	0.025334
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	14 mg/m³	17.9 mg/m³	0.782123
Combined routes	2.257 mg/kg bw/day	-	0.807457

7.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 13
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.428571 mg/kg bw/day	10.15 mg/kg bw/day	0.042224
inhalation, longterm systemic	16.303 mg/m³	17.9 mg/m³	0.910804
Combined routes	2.758 mg/kg bw/day	-	0.953027

8.1 Scenario 7: Professional application of sealants and adhesives (indoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 7

Free short title	Professional application of sealants and adhesives (indoor)
Systematic title based on use descriptor	ERC 8C; PROC 5, 8A, 10, 11, 14
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

8.2 Conditions of use affecting exposure

8.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

8.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)

Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

8.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	120 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 120 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

8.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	180 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 180 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

8.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	240 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 240 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

8.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

8.3 Exposure estimation

8.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

8.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.02406

8.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.007957 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.006469

8.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

8.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	15.651 mg/m³	17.9 mg/m³	0.874372
Combined routes	2.922 mg/kg bw/day	-	0.94193

8.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	11 mg/m³	17.9 mg/m³	0.614525
Combined routes	2.257 mg/kg bw/day	-	0.682083

8.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.514286 mg/kg bw/day	10.15 mg/kg bw/day	0.050669
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	14 mg/m³	17.9 mg/m³	0.782123
Combined routes	2.514 mg/kg bw/day	-	0.832791

8.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.679 mg/kg bw/day	10.15 mg/kg bw/day	0.263899
inhalation, longterm systemic	13.043 mg/m³	17.9 mg/m³	0.728643
Combined routes	4.542 mg/kg bw/day	-	0.992542

8.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.171429 mg/kg bw/day	10.15 mg/kg bw/day	0.01689
inhalation, longterm systemic	15.651 mg/m³	17.9 mg/m³	0.874372
Combined routes	2.407 mg/kg bw/day	-	0.891261

9.1 Scenario 8: Professional application of sealants and adhesives (outdoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 8

Free short title	Professional application of sealants and adhesives (outdoor)
Systematic title based on use descriptor	ERC 8F; PROC 5, 8A, 10, 11, 14
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

9.2 Conditions of use affecting exposure

9.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10

Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

9.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)

Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	120 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 120 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no

Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

9.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %

Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

9.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	240 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 240 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.3 Exposure estimation

9.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.02406

9.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.007957 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.006469

9.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

9.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	10.956 mg/m³	17.9 mg/m³	0.61206
Combined routes	2.251 mg/kg bw/day	-	0.679618

9.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	9.1 mg/m³	17.9 mg/m³	0.50838
Combined routes	1.986 mg/kg bw/day	-	0.575938

9.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	15 mg/m³	17.9 mg/m³	0.837989
Combined routes	3.514 mg/kg bw/day	-	0.973105

9.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.679 mg/kg bw/day	10.15 mg/kg bw/day	0.263899
inhalation, longterm systemic	9.13 mg/m³	17.9 mg/m³	0.51005
Combined routes	3.983 mg/kg bw/day	-	0.773949

9.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.171429 mg/kg bw/day	10.15 mg/kg bw/day	0.01689
inhalation, longterm systemic	10.956 mg/m³	17.9 mg/m³	0.61206
Combined routes	1.737 mg/kg bw/day	-	0.62895

10.1 Scenario 9: Professional application of coatings and fillers (indoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 9

Free short title	Professional application of coatings and fillers (indoor)
Systematic title based on use descriptor	ERC 8C; PROC 5, 8A, 10, 11, 13
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring

10.2 Conditions of use affecting exposure

10.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

10.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

10.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	120 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 120 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	

Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

10.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	180 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 180 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors

Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

10.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	240 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 240 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional

Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

10.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Qualitative Risk Assessment	
General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	

Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

10.3 Exposure estimation

10.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

10.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg_{dwt}	6.6 mg/kg_{dwt}	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg_{dwt}	0.660 mg/kg_{dwt}	0.02406

10.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.007957 mg/kg_{dwt}	1.23 mg/kg_{dwt}	0.006469

10.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

10.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	15.651 mg/m³	17.9 mg/m³	0.874372
Combined routes	2.922 mg/kg bw/day	-	0.94193

10.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	11 mg/m³	17.9 mg/m³	0.614525
Combined routes	2.257 mg/kg bw/day	-	0.682083

10.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.514286 mg/kg bw/day	10.15 mg/kg bw/day	0.050669
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	14 mg/m³	17.9 mg/m³	0.782123
Combined routes	2.514 mg/kg bw/day	-	0.832791

10.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.679 mg/kg bw/day	10.15 mg/kg bw/day	0.263899
inhalation, longterm systemic	13.043 mg/m³	17.9 mg/m³	0.728643
Combined routes	4.542 mg/kg bw/day	-	0.992542

10.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	15.651 mg/m³	17.9 mg/m³	0.874372
Combined routes	2.922 mg/kg bw/day	-	0.94193

11.1 Scenario 10: Professional application of coatings and fillers (outdoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 10

Free short title	Professional application of coatings and fillers (outdoor)
Systematic title based on use descriptor	ERC 8F; PROC 5, 8A, 10, 11, 13
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring

11.2 Conditions of use affecting exposure

11.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

11.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

11.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	120 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 120 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

11.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.

11.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	240 min/day, duration of activity has been considered linearly *(justification: Do not carry out activity for more than 240 min/day.)*
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

11.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Qualitative Risk Assessment	

General	Ensure minimization of manual phases. Keep good industrial hygiene. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Clean equipment and the work area every day. Supervision in place to check that the RMMs in place are being used correctly and OCs followed Avoid contact with contaminated tools and objects. Demonstrable and effective housekeeping practices are in place. Permit to work for maintenance work Recording of any 'near miss' situations
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 25)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

11.3 Exposure estimation

11.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

11.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.02406

11.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.007957 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.006469

11.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

11.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	10.956 mg/m³	17.9 mg/m³	0.61206
Combined routes	2.251 mg/kg bw/day	-	0.679618

11.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	9.1 mg/m³	17.9 mg/m³	0.50838
Combined routes	1.986 mg/kg bw/day	-	0.575938

11.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg bw/day	10.15 mg/kg bw/day	0.135116
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For details please refer to Annex II of the CSR.)	15 mg/m³	17.9 mg/m³	0.837989
Combined routes	3.514 mg/kg bw/day	-	0.973105

11.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.679 mg/kg bw/day	10.15 mg/kg bw/day	0.263899
inhalation, longterm systemic	9.13 mg/m³	17.9 mg/m³	0.51005
Combined routes	3.983 mg/kg bw/day	-	0.773949

11.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg bw/day	10.15 mg/kg bw/day	0.067558
inhalation, longterm systemic	10.956 mg/m³	17.9 mg/m³	0.61206
Combined routes	2.251 mg/kg bw/day	-	0.679618

12.1 Scenario 11: Consumer use of sealants and adhesives (indoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 11

Free short title	Consumer use of sealants and adhesives (indoor)
Systematic title based on use descriptor	ERC 8C; PC 1
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants

12.2 Conditions of use affecting exposure

12.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %

Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

12.2.2 Contributing Scenario (2) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.375 per year
Exposure time	5 min
Application duration	5 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.375 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	7,000 g
Dermal	2 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	0.600 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C

Dermal	
Uptake fraction	100 %

12.2.3 Contributing Scenario (3) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Assembly sealant
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	240 min
Application duration	30 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	400 g
Dermal	0.500 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	43 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.2.4 Contributing Scenario (4) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Glue to surface
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.125 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.125 per year
Release duration	2.88E4 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	2.20E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	430 cm^2
Contact rate	30 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	58 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.00E4 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.3 Exposure estimation

12.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C

Consumer use of sealants and adhesives (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

12.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.02406

12.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.007957 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.006469

12.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

12.3.2 Contributing Scenario (2) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.008562 mg/kg bw/day	5.1 mg/kg bw/day	0.001679
inhalation longterm systemic (Mean concentration yearly)	0.016695 mg/m^3	3.81 mg/m^3	0.004382
oral	-	-	-
Combined routes	0.008593 mg/kg bw/day	-	0.006061

12.3.3 Contributing Scenario (3) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Assembly sealant

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.005708 mg/kg bw/day	5.1 mg/kg bw/day	0.001119
inhalation longterm systemic (Mean concentration yearly)	0.75566 mg/m³	3.81 mg/m³	0.198336
oral	-	-	-
Combined routes	0.074767 mg/kg bw/day	-	0.199455

12.3.4 Contributing Scenario (4) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Glue to surface

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.020548 mg/kg bw/day	5.1 mg/kg bw/day	0.004029
inhalation longterm systemic (Mean concentration yearly)	0.430828 mg/m³	3.81 mg/m³	0.113078
oral	-	-	-
Combined routes	0.099294 mg/kg bw/day	-	0.117107

13.1 Scenario 12: Consumer use of sealants and adhesives (outdoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 12

Free short title	Consumer use of sealants and adhesives (outdoor)
Systematic title based on use descriptor	ERC 8F; PC 1

Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants

13.2 Conditions of use affecting exposure

13.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

13.2.2 Contributing Scenario (2) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.375 per year
Exposure time	5 min
Application duration	5 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.375 per year
Product characteristics	

Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	7,000 g
Dermal	2 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	1.5 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.2.3 Contributing Scenario (3) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Assembly sealant
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	240 min
Application duration	30 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol

Mass transfer rate	- m/min
Amounts used	
Inhalation	400 g
Dermal	0.500 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	43 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	1.5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.2.4 Contributing Scenario (4) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Glue to surface
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.125 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.125 per year
Release duration	2.88E4 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	

Inhalation	2.20E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	430 cm^2
Contact rate	30 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	58 m^3
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	1.00E4 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.3 Exposure estimation

13.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Consumer use of sealants and adhesives (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

13.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg_{dwt}	6.6 mg/kg_{dwt}	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg_{dwt}	0.660 mg/kg_{dwt}	0.02406

13.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.007957 mg/kg_{dwt}	1.23 mg/kg_{dwt}	0.006469

13.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

13.3.2 Contributing Scenario (2) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.008562 mg/kg bw/day	5.1 mg/kg bw/day	0.001679
inhalation longterm systemic (Mean concentration yearly)	0.016095 mg/m³	3.81 mg/m³	0.004224
oral	-	-	-
Combined routes	0.008592 mg/kg bw/day	-	0.005903

13.3.3 Contributing Scenario (3) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Assembly sealant

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.005708 mg/kg bw/day	5.1 mg/kg bw/day	0.001119
inhalation longterm systemic (Mean concentration yearly)	0.373859 mg/m³	3.81 mg/m³	0.098126
oral	-	-	-
Combined routes	0.039874 mg/kg bw/day	-	0.099245

13.3.4 Contributing Scenario (4) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Glue to surface

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total

exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.020548 mg/kg bw/day	5.1 mg/kg bw/day	0.004029
inhalation longterm systemic (Mean concentration yearly)	0.429062 mg/m³	3.81 mg/m³	0.112615
oral	-	-	-
Combined routes	0.098971 mg/kg bw/day	-	0.116644

14.1 Scenario 13: Consumer use of coatings and fillers (indoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 13

Free short title	Consumer use of coatings and fillers (indoor)
Systematic title based on use descriptor	ERC 8C; PC 9a, 9b
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9b Filler, putties

14.2 Conditions of use affecting exposure

14.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m³/day
Municipal sewage treatment plant discharge	2000000 L/day

14.2.2 Contributing Scenario (2) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.330 per year
Exposure time	15 min
Application duration	15 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.330 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	2.00E4 g
Dermal	2 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	0.600 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

14.2.3 Contributing Scenario (3) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	General coatings

Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.330 per year
Exposure time	120 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.330 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	8.00E4 g
Dermal	0.250 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	108 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	34 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.50E5 cm^2
Release temperature	15 °C
Dermal	
Uptake fraction	100 %

14.2.4 Contributing Scenario (4) controlling consumer exposure for PC 9b

Name of contributing scenario	PC 9b Fillers, putties, plasters, modelling clay
Scenario subtitle	Fillers, putties
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	

Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Exposure time	240 min
Application duration	30 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	200 g
Dermal	0.200 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	22 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	50 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

14.3 Exposure estimation

14.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Consumer use of coatings and fillers (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

14.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg$_{dwt}$	6.6 mg/kg$_{dwt}$	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg$_{dwt}$	0.660 mg/kg$_{dwt}$	0.02406

14.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC
Agricultural soil	0.007957 mg/kg$_{dwt}$	1.23 mg/kg$_{dwt}$	0.006469

14.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

14.3.2 Contributing Scenario (2) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (indoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.030137 mg/kg bw/day	5.1 mg/kg bw/day	0.005909
inhalation longterm systemic (Mean concentration yearly)	0.045372 mg/m³	3.81 mg/m³	0.011909
oral	-	-	-
Combined routes	0.030396 mg/kg bw/day	-	0.017818

14.3.3 Contributing Scenario (3) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (indoor) General coatings

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total

exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.000942 mg/kg bw/day	5.1 mg/kg bw/day	0.000185
inhalation longterm systemic (Mean concentration yearly)	0.294928 mg/m³	3.81 mg/m³	0.077409
oral	-	-	-
Combined routes	0.014418 mg/kg bw/day	-	0.077594

14.3.4 Contributing Scenario (4) controlling consumer exposure for PC 9b
Consumer use of coatings and fillers (indoor) Fillers, putties

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.004566 mg/kg bw/day	5.1 mg/kg bw/day	0.000895
inhalation longterm systemic (Mean concentration yearly)	0.850142 mg/m³	3.81 mg/m³	0.223134
oral	-	-	-
Combined routes	0.08226 mg/kg bw/day	-	0.22403

15.1 Scenario 14: Consumer use of coatings and fillers (outdoor)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 14

Free short title	Consumer use of coatings and fillers (outdoor)
Systematic title based on use descriptor	ERC 8F; PC 9a, 9b
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9b Filler, putties

15.2 Conditions of use affecting exposure

15.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
Annual site tonnage	99 to/year
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

15.2.2 Contributing Scenario (2) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.330 per year
Exposure time	15 min
Application duration	15 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.330 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	2.00E4 g
Dermal	2 g

Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	1.5 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

15.2.3 Contributing Scenario (3) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	General coatings
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.330 per year
Exposure time	120 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.330 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	8.00E4 g
Dermal	0.250 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	108 cm^2
Other given operational conditions affecting consumers exposure	

Inhalation	
Room volume	34 m^3
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	1.50E5 cm^2
Release temperature	15 °C
Dermal	
Uptake fraction	100 %

15.2.4 Contributing Scenario (4) controlling consumer exposure for PC 9b

Name of contributing scenario	PC 9b Fillers, putties, plasters, modelling clay
Scenario subtitle	Fillers, putties
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Exposure time	240 min
Application duration	30 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	25 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	200 g
Dermal	0.200 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	22 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	1.5 1/h

Release area increases over time	
Release area	50 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

15.3 Exposure estimation

15.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Consumer use of coatings and fillers (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

15.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Freshwater	1.16E-6 mg/L	0.015 mg/L	0.000078
Freshwater sediment	0.015694 mg/kg_{dwt}	6.6 mg/kg_{dwt}	0.023779
Marine water	1.18E-7 mg/L	0.0015 mg/L	0.000078
Marine water sediment	0.001588 mg/kg_{dwt}	0.660 mg/kg_{dwt}	0.02406

15.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
Agricultural soil	0.007957 mg/kg_{dwt}	1.23 mg/kg_{dwt}	0.006469

15.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**
STP	0.000013 mg/L	9.5 mg/L	1.39E-6

15.3.2 Contributing Scenario (2) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (outdoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.030137 mg/kg bw/day	5.1 mg/kg bw/day	0.005909
inhalation longterm systemic (Mean concentration yearly)	0.045367 mg/m³	3.81 mg/m³	0.011907
oral	-	-	-
Combined routes	0.030396 mg/kg bw/day	-	0.017816

15.3.3 Contributing Scenario (3) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (outdoor) General coatings

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.000942 mg/kg bw/day	5.1 mg/kg bw/day	0.000185
inhalation longterm systemic (Mean concentration yearly)	0.295053 mg/m³	3.81 mg/m³	0.077442
oral	-	-	-
Combined routes	0.014424 mg/kg bw/day	-	0.077626

15.3.4 Contributing Scenario (4) controlling consumer exposure for PC 9b
Consumer use of coatings and fillers (outdoor) Fillers, putties

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.004566 mg/kg bw/day	5.1 mg/kg bw/day	0.000895
inhalation longterm systemic (Mean concentration yearly)	0.378902 mg/m³	3.81 mg/m³	0.099449
oral	-	-	-
Combined routes	0.039194 mg/kg bw/day	-	0.100345

Annex I ART Report

Conditions for all uses described in tables below:

Vapour pressure:	47 Pa
Product type:	liquid
Activity coefficient:	1 (default)
Housekeeping in place:	yes

Industrial Uses

Process category (PROC)	**10**	**10**
Exposure time	180	360
Process temperature	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)
Liquid weight fraction	0.25	0.25
Near/Far field	NF	NF
Activity class	Spreading of liquid products	Spreading of liquid products
Situation	Spreading of liquids at surfaces or work pieces > 3 m² / hour	Spreading of liquids at surfaces or work pieces > 3 m² / hour
Primary control measures	None	None
Secondary control measures	None	None
Work area	Indoors	Indoors
Room size and ventilation	Any size, 3 ACH	Any size, 3 ACH
Long-term Inhalative Exposure Estimate (90th percentile full-shift exposure)	14 mg/m^3	16 mg/m^3

Professional Uses

Process category (PROC)	**8a**	**8a**	**10**	**10**
Exposure time	240	240	240	240
Process temperature	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)
Liquid weight fraction	0.25	0.25	0.25	0.25
Near/Far field	NF	NF	NF	NF
Activity class	Falling liquids	Falling liquids	Spreading of liquid products	Spreading of liquid products
Situation	Transfer of liquid product with flow of 100 - 1000 L/minute	Transfer of liquid product with flow of 100 - 1000 L/minute	Spreading of liquids at surfaces or work pieces > 3 m² / hour	Spreading of liquids at surfaces or work pieces > 3 m² / hour
Primary control measures	None	None	None	None
Secondary control measures	None	None	None	None
Work area	Indoors	Outdoors	Indoors	Outdoors
Room size and ventilation	Any size, 3 ACH	-	Any size, 10 ACH	-
Long-term Inhalative Exposure Estimate (90th percentile full-shift exposure)	5.7 mg/m^3	4.5 mg/m^3	11 mg/m^3	15 mg/m^3