# SAFETY DATA SHEET

Triethylenetetramine, TETA

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

### 1.1 Product identifier

**Product name** : Triethylenetetramine, TETA

**Index number** : 612-065-00-8

**EC number** : 292-588-2

**REACH Registration number**

| Registration number | Legal entity |
|---|---|
| 01-2119487919-13-0000 | Delamine BV |

**CAS number** : 90640-67-8

**Product description** : Not applicable

**Product type** : Liquid.

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

**Product use** : Adhesives, binding agents Dye. Pigments. Complexing agents Corrosion inhibitor. Fixing agents Blowing agent. Fuel. Fuel additive. Heat transfer agents Intermediate. Laboratory activities Lubricants and additives Pharmaceuticals. Surface-active agents

**Area of application** : Industrial applications.

| Identified uses |
|---|
| Consumer uses of ethyleneamines |
| Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% - Professional |
| Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% - Industrial |
| Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Industrial |
| Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Professional |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional |
| Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional |
| Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial |
| Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial |
| Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional |
| Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional |
| Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% - Professional |

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

Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% - Industrial
Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% - Industrial
Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Industrial
Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Professional

### 1.3 Details of the supplier of the safety data sheet

DELAMINE B.V.
Barchman Wuytierslaan 10
3818 LH Amersfoort
The Netherlands
Tel.:31-334676897

**e-mail address of person responsible for this SDS** : SDS.Delamine@delamine.com

### 1.4 Emergency telephone number

**Supplier**

**Telephone number** : AkzoNobel Chemicals-Deventer-NLT +31 570 679211 (24hours/7days)
F +31 570 679801

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Product definition** : Multi-constituent substance

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

Acute Tox. 4, H302
Acute Tox. 4, H312
Skin Corr. 1A, H314
Eye Dam. 1, H318
Skin Sens. 1, H317
Aquatic Chronic 3, H412

**Classification according to Directive 67/548/EEC [DSD]**

Xn; R21/22
C; R34
R43
R52/53

See Section 16 for the full text of the R phrases or H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

### 2.2 Label elements

**Hazard pictograms** :

**Signal word** : Danger

**Hazard statements** : Harmful if swallowed.
Harmful in contact with skin.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Harmful to aquatic life with long lasting effects.

**Precautionary statements**

## SECTION 2: Hazards identification

**Prevention** : Wear protective gloves: >8 hours (breakthrough time): neoprene. Wear eye or face protection. Wear protective clothing. Avoid release to the environment.

**Response** : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or physician. IF IN EYES: Immediately call a POISON CENTER or physician.

**Storage** : Store locked up.

**Disposal** : Not applicable.

**Supplemental label elements** : Not applicable.

### 2.3 Other hazards

**Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII** : No.

**Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII** : No.

**Other hazards which do not result in classification** : Not applicable.

## SECTION 3: Composition/information on ingredients

**Substance/mixture** : Multi-constituent substance

| Product/ingredient name | Identifiers | % | Classification 67/548/EEC | Classification Regulation (EC) No. 1272/2008 [CLP] | Type |
|---|---|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | REACH #: 01-2119487919-13<br>EC: 292-588-2<br>CAS: 90640-67-8<br>Index: 612-065-00-8 | 100 | Xn; R21/22<br><br>C; R34<br>R43<br>R52/53 | Acute Tox. 4, H302<br><br>Acute Tox. 4, H312<br>Skin Corr. 1A, H314<br>Eye Dam. 1, H318<br>Skin Sens. 1, H317<br>Aquatic Chronic 3, H412 | [*] |
| 3,6-diazaoctanethylenediamin | EC: 203-950-6<br>CAS: 112-24-3<br>Index: 612-059-00-5 | 50 - 100 | Xn; R21<br>C; R34<br>R43<br>R52/53 | Acute Tox. 4, H312<br>Skin Corr. 1B, H314<br>Eye Dam. 1, H318<br>Skin Sens. 1, H317<br>Aquatic Chronic 3, H412 | [A] |
| N,N-bis(2-aminoethyl)ethylenediamine | EC: 223-857-4<br>CAS: 4097-89-6 | 0 - 20 | T; R24<br>Xn; R22<br>C; R34<br><br>**See section 16 for the full text of the R-phrases declared above** | Acute Tox. 4, H302<br>Acute Tox. 3, H311<br>Skin Corr. 1B, H314<br>Eye Dam. 1, H318<br>STOT SE 1, H370<br><br>**See Section 16 for the full text of the H statements declared above.** | [A] |

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

## SECTION 3: Composition/information on ingredients

Type

[*] Substance
[A] Constituent
[B] Impurity
[C] Stabilising additive

Occupational exposure limits, if available, are listed in Section 8.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

**Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

**Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

**Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

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

**Potential acute health effects**

**Eye contact** : Causes serious eye damage.

**Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Skin contact** : Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.

**Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

**Over-exposure signs/symptoms**

## SECTION 4: First aid measures

**Eye contact** : Adverse symptoms may include the following:
pain
watering
redness

**Inhalation** : No specific data.

**Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

**Ingestion** : Adverse symptoms may include the following:
stomach pains

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

**Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

**Specific treatments** : No specific treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.Dry sand or other suitable absorbent. Use dry chemical, $CO_2$, water spray (fog) or foam.

**Unsuitable extinguishing media** : Halones

### 5.2 Special hazards arising from the substance or mixture

**Hazards from the substance or mixture** : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Hazardous combustion products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

### 5.3 Advice for firefighters

**Special precautions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

## SECTION 6: Accidental release measures

**6.2 Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

### 6.3 Methods and materials for containment and cleaning up

**Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

**Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

**6.4 Reference to other sections** : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

**Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

**7.2 Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

### 7.3 Specific end use(s)

**Recommendations** : No specific data.

**Industrial sector specific solutions** : No specific data.

# SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

## 8.1 Control parameters

### Occupational exposure limits

No exposure limit value known.

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

### Derived effect levels

| Product/ingredient name | Type | Exposure | Value | Population | Effects |
|---|---|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | DNEL | Short term Inhalation | 5380 mg/m³ | Workers | Systemic |
| | DNEL | Long term Dermal | 0.57 mg/kg bw/day | Workers | Systemic |
| | DNEL | Long term Inhalation | 1 mg/m³ | Workers | Systemic |
| | DNEL | Long term Dermal | 0.028 mg/cm² | Workers | Local |
| | DNEL | Short term Dermal | 8 mg/kg bw/day | Consumers | Systemic |
| | DNEL | Short term Inhalation | 1600 mg/m³ | Consumers | Systemic |
| | DNEL | Short term Oral | 20 mg/kg bw/day | Consumers | Systemic |
| | DNEL | Short term Dermal | 1 mg/cm² | Consumers | Local |
| | DNEL | Long term Dermal | 0.25 mg/kg bw/day | Consumers | Systemic |
| | DNEL | Long term Inhalation | 0.29 mg/m³ | Consumers | Systemic |
| | DNEL | Long term Oral | 0.41 mg/kg bw/day | Consumers | Systemic |
| | DNEL | Long term Dermal | 0.43 mg/cm² | Consumers | Local |

### Predicted effect concentrations

| Product/ingredient name | Type | Compartment Detail | Value | Method Detail |
|---|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | PNEC | Secondary Poisoning | 0.18 mg/kg | Assessment Factors |
| | PNEC | Fresh water | 135 µg/l | Assessment Factors |
| | PNEC | Marine | 2.7 µg/l | Assessment Factors |
| | PNEC | Fresh water sediment | 2.08 mg/kg dwt | - |
| | PNEC | Marine water sediment | 0.123 mg/kg dwt | - |
| | PNEC | Soil | 1.67 mg/kg dwt | - |
| | PNEC | Sewage Treatment Plant | 8 mg/l | Assessment Factors |

## 8.2 Exposure controls

**Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

### Individual protection measures

## SECTION 8: Exposure controls/personal protection

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

**Skin protection**

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. >8 hours (breakthrough time): neoprene

**Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: neoprene Boots.

**Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: ammonia filter (Type K) ammonia (Type K) and particulate filter

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

**Appearance**

**Physical state** : Liquid.

**Colour** : Off-white. Clear.

**Odour** : Faint odour.

**Odour threshold** : Not available.

**pH** : 13.2

**Melting point/freezing point** : <-20°C

**Initial boiling point and boiling range** : 274.6°C

**Flash point** : Closed cup: 118°C

**Evaporation rate** : Not available.

**Flammability (solid, gas)** : Not applicable.

**Burning time** : Not applicable.

**Burning rate** : Not applicable.

**Upper/lower flammability or explosive limits** : Not available.

**Vapour pressure** : <0.002 kPa [20°C]

**Vapour density** : Not available.

**Relative density** : 0.971

**Solubility(ies)** : >1000 g/l

**Partition coefficient: n-octanol/water** : -2.65

## SECTION 9: Physical and chemical properties

**Auto-ignition temperature** : 325°C

**Decomposition temperature** : Not available.

**Viscosity** : Not available.

**Explosive properties** : Not applicable.

**Oxidising properties** : None.

### 9.2 Other information

No additional information.

## SECTION 10: Stability and reactivity

**10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.

**10.2 Chemical stability** : The product is stable.

**10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

**10.4 Conditions to avoid** : Keep away from sources of ignition - No smoking. aerosol or mist formation

**10.5 Incompatible materials** : Reactive or incompatible with the following materials: oxidizing materials, acids and moisture.
Metal.
Chlorinated hydrocarbon.

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

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | LD50 Dermal | Rat | 1465 mg/kg | - |
| | LD50 Oral | Rat | 1716 mg/kg | - |

**Conclusion/Summary** : Oral Harmful if swallowed.
Dermal Harmful in contact with skin.
Inhalation No applicable toxicity data Cannot be classified.

**Irritation/Corrosion**

**Conclusion/Summary**

**Skin** : Corrosive to the skin.

**Eyes** : Corrosive to eyes.

**Respiratory** : No data available for this end-point, hence this classification is not considered to be applicable.

**Sensitiser**

| Product/ingredient name | Route of exposure | Species | Result |
|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | skin | Guinea pig | Sensitising |

**Conclusion/Summary**

**Skin** : May cause skin sensitisation.

## SECTION 11: Toxicological information

**Respiratory** : No data available for this end-point, hence this classification is not considered to be applicable.

**Mutagenicity**

| Product/ingredient name | Test | Experiment | Result |
|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | - | Experiment: In vivo<br>Subject: Mammalian-Animal | Negative |

**Conclusion/Summary** : No mutagenic effect.

**Carcinogenicity**

**Conclusion/Summary** : skin No carcinogenic effect.

**Reproductive toxicity**

**Conclusion/Summary** : Developmental Toxicity: Data inconclusive. Cannot be classified.
NOAEL Oral= 750 mg/kg bw/day
NOAEL Dermal= 125 mg/kg bw/day
Developmental effects have been observed in an animal study with high doses of a related salt. The relevance of those effects are currently under investigation.

**Teratogenicity**

**Conclusion/Summary** : Data inconclusive. Cannot be classified.

**Specific target organ toxicity (single exposure)**

| Product/ingredient name | Category | Route of exposure | Target organs |
|---|---|---|---|
| N,N-bis(2-aminoethyl)ethylenediamine | Category 1 | Not determined | gastrointestinal tract and respiratory tract |

**Specific target organ toxicity (repeated exposure)**

Not available.

**Aspiration hazard**

Not available.

**Information on the likely routes of exposure** : Routes of entry anticipated:Oral.

**Potential acute health effects**

**Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

**Skin contact** : Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.

**Eye contact** : Causes serious eye damage.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation** : No specific data.

**Ingestion** : Adverse symptoms may include the following:
stomach pains

**Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

**Eye contact** : Adverse symptoms may include the following:
pain
watering
redness

**Delayed and immediate effects and also chronic effects from short and long term exposure**

**Short term exposure**

## SECTION 11: Toxicological information

**Potential immediate effects** : No specific data.

**Potential delayed effects** : No specific data.

**Long term exposure**

**Potential immediate effects** : No specific data.

**Potential delayed effects** : No specific data.

**Potential chronic health effects**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | Sub-chronic LOAEL Oral | Rat | 50 mg/kg | - |

**Conclusion/Summary** : No known significant effects or critical hazards. Not classified as dangerous

**General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Teratogenicity** : No known significant effects or critical hazards.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : No known significant effects or critical hazards.

**Absorption** : Slowly absorbed.

**Metabolism** : Rapidly metabolised.

**Elimination** : Rapidly excreted.

**Other information** : No specific data.

## SECTION 12: Ecological information

### 12.1 Toxicity

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | EC50 800 mg/l | Micro-organism | 30 minutes |
| | NOEC 42.5 mg/l | Micro-organism | 30 minutes |
| | Acute EC50 20 mg/l | Algae | 72 hours |
| | Acute EC50 31.1 mg/l | Daphnia | 48 hours |
| | Acute LC50 330 mg/l | Fish | 96 hours |
| | Chronic NOEC 1.9 mg/l | Daphnia | 21 days |

**Conclusion/Summary** : AQUATIC TOXICITY (CHRONIC)
PNEC Intermittent release.= 0.2 mg/l

### 12.2 Persistence and degradability

**Conclusion/Summary** : This substance is not expected to bioaccumulate through food chains in the environment. Persistent Toxic Not readily biodegradable.

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | - | - | Not readily |

### 12.3 Bioaccumulative potential

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| Amines, polyethylenepoly-, triethylenetetramine fraction | -2.65 | - | low |

### 12.4 Mobility in soil

## SECTION 12: Ecological information

**Soil/water partition coefficient ($K_{OC}$)** : 4000

**Mobility** : No specific data.

### 12.5 Results of PBT and vPvB assessment

**PBT** : No.

**vPvB** : No.

**12.6 Other adverse effects** : No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste treatment methods

**Product**

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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.

**Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.

**Packaging**

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

| | ADR/RID | ADN/ADNR | IMDG | IATA |
|---|---|---|---|---|
| **14.1 UN number** | UN2259 | UN2259 | UN2259 | UN2259 |
| **14.2 UN proper shipping name** | TRIETHYLENETETRAMINE | TRIETHYLENETETRAMINE | TRIETHYLENETETRAMINE | Triethylenetetramine |
| **14.3 Transport hazard class(es)** | 8  | 8  | 8  | 8  |
| **14.4 Packing group** | II | II | II | II |
| **14.5 Environmental hazards** | No. | Yes. | No. | No. |
| **14.6 Special precautions for user** | Not available. | Not available. | Not available. | Not available. |

## SECTION 14: Transport information

| | | | | |
|---|---|---|---|---|
| **Additional information** | **Hazard identification number**<br>80<br><br>**Limited quantity**<br>1 L<br><br>**Tunnel code**<br>(E) | - | **Emergency schedules (EmS)**<br>F-A, S-B | **Passenger and Cargo Aircraft**<br>Quantity limitation: 1 L<br>Packaging instructions: 851<br>**Cargo Aircraft Only**<br>Quantity limitation: 30 L<br>Packaging instructions: 855<br>**Limited Quantities - Passenger Aircraft**<br>Quantity limitation: 0.5 L<br>Packaging instructions: Y840 |

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** : Not available.

## SECTION 15: Regulatory information

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

#### EU Regulation (EC) No. 1907/2006 (REACH)

##### Annex XIV - List of substances subject to authorisation

###### Substances of very high concern

None of the components are listed.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : Not applicable.

#### Other EU regulations

**Europe inventory** : All components are listed or exempted.

**Black List Chemicals** : Not listed

**Priority List Chemicals** : Not listed

**Integrated pollution prevention and control list (IPPC) - Air** : Not listed

**Integrated pollution prevention and control list (IPPC) - Water** : Not listed

#### International regulations

**Chemical Weapons Convention List Schedule I Chemicals** : Not listed

**Chemical Weapons Convention List Schedule II Chemicals** : Not listed

**Chemical Weapons Convention List Schedule III Chemicals** : Not listed

## SECTION 15: Regulatory information

**15.2 Chemical Safety Assessment** : Complete.

**15.3 Registration status** : Applicable.

## SECTION 16: Other information

Indicates information that has changed from previously issued version.

**Abbreviations and acronyms** : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

**Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

| Classification | Justification |
|---|---|
| Acute Tox. 4, H302 | Expert judgment |
| Acute Tox. 4, H312 | Expert judgment |
| Skin Corr. 1A, H314 | Expert judgment |
| Eye Dam. 1, H318 | Expert judgment |
| Skin Sens. 1, H317 | Expert judgment |
| Aquatic Chronic 3, H412 | Expert judgment |

**Full text of abbreviated H statements** :
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H370 Causes damage to organs.
H412 Harmful to aquatic life with long lasting effects.

**Full text of classifications [CLP/GHS]** :

| | |
|---|---|
| Acute Tox. 3, H311 | ACUTE TOXICITY: SKIN - Category 3 |
| Acute Tox. 4, H302 | ACUTE TOXICITY: ORAL - Category 4 |
| Acute Tox. 4, H312 | ACUTE TOXICITY: SKIN - Category 4 |
| Aquatic Chronic 3, H412 | AQUATIC TOXICITY (CHRONIC) - Category 3 |
| Eye Dam. 1, H318 | SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1 |
| Skin Corr. 1A, H314 | SKIN CORROSION/IRRITATION - Category 1A |
| Skin Corr. 1B, H314 | SKIN CORROSION/IRRITATION - Category 1B |
| Skin Sens. 1, H317 | SKIN SENSITIZATION - Category 1 |
| STOT SE 1, H370 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [gastrointestinal tract and respiratory tract] - Category 1 |

**Full text of abbreviated R phrases** : R24- Toxic in contact with skin.
R21- Harmful in contact with skin.
R22- Harmful if swallowed.
R21/22- Harmful in contact with skin and if swallowed.
R34- Causes burns.
R43- May cause sensitisation by skin contact.
R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Full text of classifications [DSD/DPD]** : T - Toxic
C - Corrosive
Xn - Harmful

**Date of issue/ Date of revision** : 25 February 2011

**Date of previous issue** : 10/11/2010

**Version** : 8

**Notice to reader**

## SECTION 16: Other information

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

**Annex to the extended Safety Data Sheet (eSDS)**

**Consumer**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Consumer uses of ethyleneamines<br>**Sector of end use:** SU21<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC08a, ERC08b, ERC08c, ERC08d, ERC08e, ERC08f<br>**Market sector by type of chemical product:** PC01, PC09b<br>**Article category related to subsequent service life:** Not applicable. |
| **List of use descriptors** | **Identified use name:** Consumer uses of ethyleneamines<br>**Sector of end use:** SU21<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC08a, ERC08b, ERC08c, ERC08d, ERC08e, ERC08f<br>**Market sector by type of chemical product:** PC01, PC09b<br>**Article category related to subsequent service life:** Not applicable. |
| **Processes and activities covered by the exposure scenario** | Not applicable. |
| **Assessment Method** | See Section 3 |

## Section 2: Operational conditions and risk management measures

### Section 2.1: Control of consumer exposure

**Physical state:**

Physical state: liquid
Molecular weight: 146.23 g/mole
Vapour pressure: 0.346 Pa*s at 25°C

### Contributing scenarios: Operational conditions and risk management measures

Product Categories 1: Adhesives, sealants Mixing and loading
Operations Conditions (consumer):
- Covers use up to 3 days a Year
- Covers use up to 25%
- For each use event, covers use amounts up to 20 g
- Covers exposure up to 5 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 25%

Product Categories 1: Adhesives, sealants Application(s)
Operations Conditions (consumer):
- Covers use up to 3 days a Year
- Covers use up to 5%
- For each use event, covers use amounts up to 20 g
- Covers use in room size of 20 $m^3$
- Covers exposure up to 90 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 5%

Product Categories 9b: Fillers, putties, plasters, modelling clay
Operations Conditions (consumer):
- Covers use up to 2 days a Year
- Covers use up to 25%
- For each use event, covers use amounts up to 200 g
- Covers exposure up to 5 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 25%

Product Categories 9b: Fillers, putties, plasters, modelling clay Application(s)
Operations Conditions (consumer):
- Covers use up to 2 days a Year
- Covers use up to 5%
- For each use event, covers use amounts up to 200 g
- Covers use in room size of 20 $m^3$
- Covers exposure up to 90 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 5%

**Section 2.2: Control of environmental exposure**

Operational conditions: Not determined

| | |
|---|---|
| **Product Characteristics:** | Indoor/Outdoor use. |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Average Local Daily Tonnage (kg/day)** | 11636 |
| **Frequency and duration of use:** | Continuous release. |

**Section 3: Exposure estimation and reference to its source**

**Section 3.1: Exposure estimation - Consumers**

| | Contributing Scenario: | Frequency (1/Year): | Weight fraction of substance in the article:: | Body weight: | Calculation method: |
|---|---|---|---|---|---|
| **Exposure estimation and reference to its source - Consumers: 0:** | Adhesives, sealants - Mixing and loading; Adhesives, sealants - Application(s); Fillers, putties, plasters, modelling clay - Mixing and loading; Fillers, putties, plasters, modelling clay - Application(s) | 3; 3; 2; 2 | 25%; 5%; 25%; 5% | 60 kg | ConsExpo 4.1 |

**Inhalation :**

**Mode of release:** evaporation

## Exposure estimation and reference to its source - Consumers: 1:

| Exposure (minutes): | Application duration: | Amount/concentration applied (g): | Room volume ($m^3$): | Room volume x ventilation rate: (l/h): |
|---|---|---|---|---|
| 5; 90; 5; 90 | 5; 30; 5; 30 | 20; 20; 200; 200 | 1; 20; 1; 20 | 0.6 |

| Release area (cm2): | Temperature (°C): | Mass transfer rate: | Contributing Scenario Molecular weight (g/mole): | Uptake fraction (Update model): | Inhalation rate: |
|---|---|---|---|---|---|
| 20; 500; 100; 50 | 20 | 3.09E+03 | 550 | 1 | 32.9 |

**Dermal:**

**Application methods:** instant

| Surface area (Skin contact area) cm2: | Product amount (g): | Uptake fraction (Update model): | Inhalation event ($mg/m^3$): |
|---|---|---|---|
| 2; 43; 2; 22 | 0.05; 0.1; 0.02; 1 | 1 | 11.2; 3.0; 11.5; 3.1 |

| Inhalation $mg/m^3$ (Concentration on day of exposure): | Dermal load (mg/cm2): | Dermal External dose (mg/kg bw): | Dermal (Internal dose) mg/kg bw/day: |
|---|---|---|---|
| 0.039; 0.188; 0.040; 0.191 | 6.25; 0.12; 2.5; 0.46 | 0.208; 0.08; 0.08; 1.67 | 0.002; 0.001; 5E-4; 0.001 |

| Dermal (External dose) mg/kg bw/day: | Inhalation event/Exposure $mg/m^3$ (Short term exposure): | Dermal systemic exposure (external dose) with gloves (90% efficiency) mg/kg bw/day (Long term exposure): | Inhalation (mg/kg/day) Long term exposure: |
|---|---|---|---|
| 0.002; 0.001; 5E-4; 0.001 | 11.2; 3.0; 11.5; 3.1 | 0.0002; 0.0001; 5E-5; 0.0001 | 0.039; 0.188; 0.040; 0.191 |

**Section 3.2 Exposure estimation-Consumers**

**Contributing exposure scenario controlling worker exposure for 0:**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Oral** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Inhalable** | | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Oral** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.3 Environment Exposure estimation**

**Contributing exposure scenario controlling environmental exposure for 1:**

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.0561 | 28 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 0 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 14 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.018 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 26.5 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.74x10-3 | 3.17x10-3 | EUSES calculation |
| **Marine water mg/l** | 2.78x10-4 | 4.20x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 1.60 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.212 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.75x10-10 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 9.40x10-10 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 2.22x10-11 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.22x10-11 | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 4.01x10-11 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to Downstream User to evaluate if he works inside the boundaries set by the ES**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional guidance** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC05, PROC08a, PROC08b, PROC09<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC05, PROC08a, PROC08b, PROC09<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |

| | |
|---|---|
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations***

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2684 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |

| | |
|---|---|
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11378 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 5.0x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.005 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

| | | | |
|---|---|---|---|
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.005 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.31 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.625 | 73.1 | EUSES calculation |
| Surface water | Not evaluated. | 18.3 | EUSES calculation |
| air (direct + STP) | 17.1 | 47.3 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 29.3 | EUSES calculation |

| | Value | Justification |
|---|---|---|
| Concentration in sewage (PECstp) mg/l | 0.196 | EUSES calculation |
| Concentration in sewage sludge mg/kg dwt | 295 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| Fresh water mg/l | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| Marine water mg/l | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.82 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 1.05 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | 0.0832 | 0.197 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.165 | 0.279 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 4.7x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| Annual deposition mg/m2/d | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.625 | 73.1 | EUSES calculation |
| Surface water | Not evaluated. | 18.3 | EUSES calculation |
| air (direct + STP) | 17.1 | 47.3 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.196 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| Marine water mg/l | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.82 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.0832 | 0.197 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.165 | 0.279 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 4.7x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| Annual deposition mg/m2/d | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations*

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0.513 | EUSES calculation |
| Surface water | Not evaluated. | 0 | EUSES calculation |
| air (direct + STP) | 3.0 | 14 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 1.27 | EUSES calculation |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 0 | 1.43.x10-3 | EUSES calculation |
| Marine water mg/l | 0 | 1.43x10-4 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0108 | 0.125 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.0214 | 0.135 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.24x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 8.2x10-4 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 5.1x10-4 | 5.1x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 9.1x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.568 | 0.35 | EUSES calculation |
| **Surface water** | Not evaluated. | 0 | EUSES calculation |
| **air (direct + STP)** | 12.5 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.178 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 269 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.77x10-2 | 1.91x10-2 | EUSES calculation |
| **Marine water mg/l** | 1.77x10-3 | 1.91x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 9.64 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.96 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0458 | 0.16 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.0907 | 0.20 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.6x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.5x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.1x10-3 | 5.1x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.9x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% - Industrial<br>**Process Category:** PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% - Industrial<br>**Process Category:** PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Use in closed process, no likelihood of exposure**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Use in closed, continuous process with occasional controlled exposure**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Do not use for more than 4 hours |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Use in closed batch process (synthesis or formulation)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90% |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Use in batch and other process (synthesis) where opportunity for exposure arises**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90% |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 4: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Local exhaust ventilation should be provided. with a minimum efficacy of 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90% |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Do not use for more than 1 hours |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |

| | |
|---|---|
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 95% |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Avoid carrying out operation for more than 4 hours. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 7: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90% |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 8: Use as laboratory reagent**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 100% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90% |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |

| | |
|---|---|
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations***

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2684 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | Not applicable as there is no release to wastewater. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11378 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |

| | |
|---|---|
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 5.0x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Use in closed process, no likelihood of exposure**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.007 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.06 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.12 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Use in closed, continuous process with occasional controlled exposure**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Use in closed batch process (synthesis or formulation)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Use in batch and other process (synthesis) where opportunity for exposure arises**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.14 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.30 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.62 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 4: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.27 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.30 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.60 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.27 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.37 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.74 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.14 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.548 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.55 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 7: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.14 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.30 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

| | | | |
|---|---|---|---|
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.62 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 8: Use as laboratory reagent**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.625 | 73.1 | EUSES calculation |
| **Surface water** | Not evaluated. | 18.3 | EUSES calculation |
| **air (direct + STP)** | 17.1 | 47.3 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 29.3 | EUSES calculation |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0.196 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 295 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| **Marine water mg/l** | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.82 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 1.05 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | 0.0832 | 0.197 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.165 | 0.279 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 4.7x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| Annual deposition mg/m2/d | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.625 | 73.1 | EUSES calculation |
| Surface water | Not evaluated. | 18.3 | EUSES calculation |
| air (direct + STP) | 17.1 | 47.3 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.196 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| Marine water mg/l | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.82 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.0832 | 0.197 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.165 | 0.279 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 4.7x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| Annual deposition mg/m2/d | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations*

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0.513 | EUSES calculation |
| Surface water | Not evaluated. | 0 | EUSES calculation |
| air (direct + STP) | 3.0 | 14 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 1.27 | EUSES calculation |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 0 | 1.43.x10-3 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Marine water mg/l** | 0 | 1.43x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0108 | 0.125 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.0214 | 0.135 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.24x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 8.2x10-4 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 5.1x10-4 | 5.1x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 9.1x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.568 | 0.35 | EUSES calculation |
| **Surface water** | Not evaluated. | 0 | EUSES calculation |
| **air (direct + STP)** | 12.5 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.178 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 269 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.77x10-2 | 1.91x10-2 | EUSES calculation |
| **Marine water mg/l** | 1.77x10-3 | 1.91x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 9.64 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.96 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0458 | 0.16 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.0907 | 0.20 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.6x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.5x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.1x10-3 | 5.1x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.9x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC08a<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC08a<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |

| | |
|---|---|
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations***

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2684 |

| | |
|---|---|
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11378 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 5.0x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.001 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.76 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 1.52 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.625 | 73.1 | EUSES calculation |
| Surface water | Not evaluated. | 18.3 | EUSES calculation |
| air (direct + STP) | 17.1 | 47.3 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.196 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| Marine water mg/l | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.82 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.0832 | 0.197 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.165 | 0.279 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Groundwater mg/l** | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 4.7x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.625 | 73.1 | EUSES calculation |
| **Surface water** | Not evaluated. | 18.3 | EUSES calculation |
| **air (direct + STP)** | 17.1 | 47.3 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.196 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| **Marine water mg/l** | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.82 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0832 | 0.197 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.165 | 0.279 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 4.7x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations*

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0.513 | EUSES calculation |
| **Surface water** | Not evaluated. | 0 | EUSES calculation |
| **air (direct + STP)** | 3.0 | 14 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 1.27 | EUSES calculation |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0 | 1.43.x10-3 | EUSES calculation |
| **Marine water mg/l** | 0 | 1.43x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | 0.0108 | 0.125 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.0214 | 0.135 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.24x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 8.2x10-4 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 5.1x10-4 | 5.1x10-4 | EUSES calculation |
| Annual deposition mg/m2/d | 9.1x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.568 | 0.35 | EUSES calculation |
| Surface water | Not evaluated. | 0 | EUSES calculation |
| air (direct + STP) | 12.5 | 7.71 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.178 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0269 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.77x10-2 | 1.91x10-2 | EUSES calculation |
| Marine water mg/l | 1.77x10-3 | 1.91x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 9.64 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.96 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.0458 | 0.16 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.0907 | 0.20 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.6x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 3.5x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 2.1x10-3 | 5.1x10-4 | EUSES calculation |
| Annual deposition mg/m2/d | 3.9x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| Environment | Not available. |
| Health | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| Environment | Not applicable. |
| Health | Not applicable. |
| Additional good practices | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC05, PROC08a, PROC08b, PROC09<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC05, PROC08a, PROC08b, PROC09<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |

| | |
|---|---|
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations***

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2684 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |

| | |
|---|---|
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11378 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 5.0x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | Prevent discharge of undissolved substance to or recover from onsite wastewater. |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.001 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.76 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.52 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.625 | 73.1 | EUSES calculation |
| Surface water | Not evaluated. | 18.3 | EUSES calculation |
| air (direct + STP) | 17.1 | 47.3 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.196 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| Marine water mg/l | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.82 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.0832 | 0.197 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.165 | 0.279 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 4.7x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| Annual deposition mg/m2/d | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.625 | 73.1 | EUSES calculation |
| **Surface water** | Not evaluated. | 18.3 | EUSES calculation |
| **air (direct + STP)** | 17.1 | 47.3 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.196 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| **Marine water mg/l** | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.82 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0832 | 0.197 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.165 | 0.279 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 4.7x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations*

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0.513 | EUSES calculation |
| **Surface water** | Not evaluated. | 0 | EUSES calculation |
| **air (direct + STP)** | 3.0 | 14 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 1.27 | EUSES calculation |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0 | 1.43.x10-3 | EUSES calculation |
| **Marine water mg/l** | 0 | 1.43x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0108 | 0.125 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.0214 | 0.135 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.24x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 8.2x10-4 | Not evaluated. | EUSES calculation |

| | | | |
|---|---|---|---|
| **Annual average mg/m³** | 5.1x10-4 | 5.1x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 9.1x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.568 | 0.35 | EUSES calculation |
| **Surface water** | Not evaluated. | 0 | EUSES calculation |
| **air (direct + STP)** | 12.5 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.178 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 269 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.77x10-2 | 1.91x10-2 | EUSES calculation |
| **Marine water mg/l** | 1.77x10-3 | 1.91x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 9.64 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.96 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0458 | 0.16 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.0907 | 0.20 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.6x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.5x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.1x10-3 | 5.1x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.9x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC08a<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC08a<br>**Substance supplied to that use in form of:** As such<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC06a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |

| | |
|---|---|
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Fraction of EU tonnage used in region:** | 10% |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 4650 |
| **Average Local Daily Tonnage (kg/day):** | 15500 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | Not applicable. |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 1.0x10-4 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 4.03x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations***

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2684 |

| | |
|---|---|
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11378 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 225 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | Indoor. industrial setting |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 5.0x10-5 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |
| **Assumed domestic sewage treatment plant flow (m3/d):** | 2000 |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.005 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.31 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.625 | 73.1 | EUSES calculation |
| Surface water | Not evaluated. | 18.3 | EUSES calculation |
| air (direct + STP) | 17.1 | 47.3 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.196 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| Marine water mg/l | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.82 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.0832 | 0.197 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.165 | 0.279 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Groundwater mg/l** | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 4.7x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an intermediate

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.625 | 73.1 | EUSES calculation |
| **Surface water** | Not evaluated. | 18.3 | EUSES calculation |
| **air (direct + STP)** | 17.1 | 47.3 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 29.3 | EUSES calculation |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.196 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 295 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.94x10-4 | 1.63x10-3 | EUSES calculation |
| **Marine water mg/l** | 1.94x10-3 | 2.08x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.82 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 1.05 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.0832 | 0.197 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.165 | 0.279 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.98x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 4.7x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.9x10-3 | 3.9x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 7.0x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Formulation of preparations*

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0.513 | EUSES calculation |
| **Surface water** | Not evaluated. | 0 | EUSES calculation |
| **air (direct + STP)** | 3.0 | 14 | EUSES calculation |
| **Soil (direct releases only)** | Not evaluated. | 1.27 | EUSES calculation |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0 | 1.43.x10-3 | EUSES calculation |
| **Marine water mg/l** | 0 | 1.43x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | 0.0108 | 0.125 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.0214 | 0.135 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.24x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 8.2x10-4 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 5.1x10-4 | 5.1x10-4 | EUSES calculation |
| Annual deposition mg/m2/d | 9.1x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.568 | 0.35 | EUSES calculation |
| Surface water | Not evaluated. | 0 | EUSES calculation |
| air (direct + STP) | 12.5 | 7.71 | EUSES calculation |
| Soil (direct releases only) | Not evaluated. | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.178 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 269 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.77x10-2 | 1.91x10-2 | EUSES calculation |
| Marine water mg/l | 1.77x10-3 | 1.91x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable | Not applicable | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 9.64 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.96 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.0458 | 0.16 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.0907 | 0.20 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.6x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 3.5x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 2.1x10-3 | 5.1x10-4 | EUSES calculation |
| Annual deposition mg/m2/d | 3.9x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| Environment | Not available. |
| Health | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| Environment | Not applicable. |
| Health | Not applicable. |
| Additional good practices | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC13, PROC16<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03, SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |
| **List of use descriptors** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC13, PROC16<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03, SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Calendering operations**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 5: Treatment of articles by dipping and pouring**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |

| | |
|---|---|
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 6: Using material as fuel sources, limited exposure to unburned product to be expected**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 12.74 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-5 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.02 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.055 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Calendering operations**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.055 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.110 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.305 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.055 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.055 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

| | | | |
|---|---|---|---|
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 5: Treatment of articles by dipping and pouring**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.110 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.305 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 6: Using material as fuel sources, limited exposure to unburned product to be expected**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 1.75x10-3 | 3.5 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | Not evaluated. | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | Not evaluated. | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 1.04x10-5 | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | 2.06x10-5 | 1.13x10-3 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 0.114 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 4.87x10-7 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 4.87x10-7 | 5.16x10-7 | EUSES calculation |
| Annual deposition mg/m2/d | 8.78x10-7 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 2.47 | 33.1 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 1.24x10-3 | 1.66x10-2 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.775 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 1.17x10-3 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.077 | 0.078 | EUSES calculation |
| **Marine water mg/l** | 7.69x10-3 | 7.83x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 39.5 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 3.95 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.44x10-6 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.79x10-6 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.44x10-7 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.07x10-7 | 2.36x10-7 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.75x10-7 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03, SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |
| **List of use descriptors** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03, SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Calendering operations**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 5: Roller application or brushing**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |

| | |
|---|---|
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 7: Using material as fuel sources, limited exposure to unburned product to be expected**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 12.74 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |

| | |
|---|---|
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-5 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.02 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Calendering operations**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.027 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.76 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.52 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 5: Roller application or brushing**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.027 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.76 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.52 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 7: Using material as fuel sources, limited exposure to unburned product to be expected**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 1.75x10-3 | 3.5 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | Not evaluated. | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | Not evaluated. | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 1.04x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 2.06x10-5 | 1.13x10-3 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 0.114 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 4.87x10-7 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 4.87x10-7 | 5.16x10-7 | EUSES calculation |
| **Annual deposition mg/m2/d** | 8.78x10-7 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

| | | | |
|---|---|---|---|
| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
| **Waste water** | 2.47 | 33.1 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 1.24x10-3 | 1.66x10-2 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.775 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 1.17x10-3 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.077 | 0.078 | EUSES calculation |
| **Marine water mg/l** | 7.69x10-3 | 7.83x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 39.5 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 3.95 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.44x10-6 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.79x10-6 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.44x10-7 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.07x10-7 | 2.36x10-7 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.75x10-7 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

## Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC08a, PROC10<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |
| **List of use descriptors** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC08a, PROC10<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Roller application or brushing**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 12.74 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-5 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.02 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |

| | |
|---|---|
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.110 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.305 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 1: Roller application or brushing**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.110 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.305 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 1.75x10-3 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | Not evaluated. | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | Not evaluated. | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 1.04x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 2.06x10-5 | 1.13x10-3 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 0.114 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 4.87x10-7 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 4.87x10-7 | 5.16x10-7 | EUSES calculation |
| **Annual deposition mg/m2/d** | 8.78x10-7 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 2.47 | 33.1 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 1.24x10-3 | 1.66x10-2 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.775 | EUSES calculation | |

| | | | |
|---|---|---|---|
| **Concentration in sewage sludge mg/kg dwt** | 1.17x10-3 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.077 | 0.078 | EUSES calculation |
| **Marine water mg/l** | 7.69x10-3 | 7.83x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 39.5 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 3.95 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.44x10-6 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.79x10-6 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.44x10-7 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.07x10-7 | 2.36x10-7 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.75x10-7 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC08a<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |
| **List of use descriptors** | **Identified use name:** Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC08a<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC10b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 12.74 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| | None. |

| | |
|---|---|
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-5 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.02 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Section 3: Exposure estimation**

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.027 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.76 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 1.52 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 1.75x10-3 | 3.5 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| Concentration in sewage (PECstp) mg/l | Not evaluated. | EUSES calculation |
| Concentration in sewage sludge mg/kg dwt | Not evaluated. | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | 1.04x10-5 | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | 2.06x10-5 | 1.13x10-3 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 0.114 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| During emission mg/m³ | 4.87x10-7 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 4.87x10-7 | 5.16x10-7 | EUSES calculation |
| Annual deposition mg/m2/d | 8.78x10-7 | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 2.47 | 33.1 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 1.24x10-3 | 1.66x10-2 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | Value | Justification | |
| Concentration in sewage (PECstp) mg/l | 0.775 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 1.17x10-3 | EUSES calculation | |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Fresh water mg/l | 0.077 | 0.078 | EUSES calculation |
| Marine water mg/l | 7.69x10-3 | 7.83x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | Local concentration | PEC sediment (local+regional) | Justification |
| Fresh water sediment mg/kg dwt | Not evaluated. | 39.5 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 3.95 | EUSES calculation |
| | Local concentration | PEC soil (local+regional) | Justification |
| Agricultural soil averaged mg/kg dwt | 4.44x10-6 | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | 8.79x10-6 | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | Local concentration | PEC air (local+regional) | Justification |
| During emission mg/m³ | 3.44x10-7 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 2.07x10-7 | 2.36x10-7 | EUSES calculation |
| Annual deposition mg/m2/d | 3.75x10-7 | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| Environment | Not available. |
| Health | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| Environment | Not applicable. |
| Health | Not applicable. |
| Additional good practices | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial<br>**Process Category:** PROC05, PROC08a, PROC08b, PROC09<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial<br>**Process Category:** PROC05, PROC08a, PROC08b, PROC09<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 25%. |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Exposure duration per day: 15 min. to < 1 hour |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 25%. |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 25%. |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Avoid carrying out operation for more than 1 hour. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 25%. |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |

| | |
|---|---|
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| | 0 |

| | |
|---|---|
| **Release fraction to wastewater from process (initial release prior to RMM):** | |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |

| | |
|---|---|
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.0685714 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.3656 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 0.73115 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.0685714 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.365575 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.73115 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.034286 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.548325 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.096725 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0685714 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.365575 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.73115 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |

| | | | |
|---|---|---|---|
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 12.8 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.046 | 0.160 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.091 | 0.204 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.60x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.55x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.14x10-3 | 2.14x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.86x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |
| **List of use descriptors** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |

| | |
|---|---|
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |

| | |
|---|---|
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |

| | |
|---|---|
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0003 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.02 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.03 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 12.8 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.046 | 0.160 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.091 | 0.204 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.60x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.55x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.14x10-3 | 2.14x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.86x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |
| **List of use descriptors** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |

| | |
|---|---|
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |

| | |
|---|---|
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |

| | |
|---|---|
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.001 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.06 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.12 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.001 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.06 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.12 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |

| | | | |
|---|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 12.8 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.046 | 0.160 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.091 | 0.204 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.60x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.55x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.14x10-3 | 2.14x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.86x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |
| **List of use descriptors** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |

| | |
|---|---|
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | 220 |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |

| | |
|---|---|
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |

| | |
|---|---|
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0003 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.02 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.03 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | 8.20x10-8 | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | 1.62x10-7 | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 6.98x10-8 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0.012 | 1.82 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 4.26x10-5 | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | 8.44x10-5 | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 3.31x10-6 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| Annual deposition mg/m2/d | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.056 | 28 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0 | 0 | EUSES calculation |
| Soil (direct releases only) | 0 | 14 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.018 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 26.5 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 1.74x10-3 | 3.17x10-3 | EUSES calculation |
| Marine water mg/l | 2.78x10-4 | 4.2x10-4 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 1.60 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.212 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.75x10-10 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 9.4x10-10 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 2.22x10-11 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.22x10-11 | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 4.01x10-11 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |
| **List of use descriptors** | **Identified use name:** Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC21, PROC24<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC11a |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| | |
|---|---|
| **Product Characteristics:** | Solid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Not applicable. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |

| | |
|---|---|
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |

| | |
|---|---|
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |

| | |
|---|---|
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.001 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.06 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.12 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.001 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.06 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.12 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |

| | | | |
|---|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.056 | 28 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 0 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 14 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.018 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 26.5 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.74x10-3 | 3.17x10-3 | EUSES calculation |
| **Marine water mg/l** | 2.78x10-4 | 4.2x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 1.60 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.212 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.75x10-10 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 9.4x10-10 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 2.22x10-11 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.22x10-11 | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 4.01x10-11 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial<br>**Process Category:** PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial<br>**Process Category:** PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Calendering operations**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Industrial spraying**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90% |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Exposure duration per day: 1-4 hours |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 5: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |

| | |
|---|---|
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Exposure duration per day: 1-4 hours |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |

| | |
|---|---|
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |

| | |
|---|---|
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |

| | |
|---|---|
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.0822 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Calendering operations**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.0822 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Industrial spraying**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.1286 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0411 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.548 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.097 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0822 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 5: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0822 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

| | | | |
|---|---|---|---|
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0411 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.548 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.097 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.0822 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 4.26 | 3.5 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | 0.021 | 0.135 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.041 | 0.155 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.35x10-3 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| During emission mg/m³ | 1.18x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| Annual deposition mg/m2/d | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0 | 3.1 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | Not evaluated. | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | Not evaluated. | 2.93x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0 | 3.1 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |

| | | | |
|---|---|---|---|
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |

| | | | |
|---|---|---|---|
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 12.8 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.046 | 0.160 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.091 | 0.204 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.60x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.55x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.14x10-3 | 2.14x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.86x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

## Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial<br>**Process Category:** PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Industrial spraying**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |

| | |
|---|---|
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 5: Roller application or brushing**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |

| | |
|---|---|
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |

| | |
|---|---|
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |

| | |
|---|---|
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |

| | |
|---|---|
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.05 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Industrial spraying**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.09 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.09 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.05 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.05 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 5: Roller application or brushing**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.09 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 12.8 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.046 | 0.160 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.091 | 0.204 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.60x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.55x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.14x10-3 | 2.14x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.86x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Industrial**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03, SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial<br>**Process Category:** PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU03, SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Industrial spraying**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |

| | |
|---|---|
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 5: Roller application or brushing**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. industrial setting<br>Indoor. industrial setting and professional setting<br>Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |

| | |
|---|---|
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |

| | |
|---|---|
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |

| | |
|---|---|
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Organisational measures to prevent/limit release from site:** | |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Industrial spraying**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 5: Roller application or brushing**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Inhalable | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Short term exposure, Local, Inhalable | Not applicable. | Not applicable. | Not applicable. |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.14 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.76 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 1.52 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| During emission mg/m³ | Not evaluated. | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | Not evaluated. | 2.93x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | Not evaluated. | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0 | 3.1 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | Value | Justification | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | Local concentration | PEC sediment (local+regional) | Justification |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |
| | Local concentration | PEC soil (local+regional) | Justification |
| Agricultural soil averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | Local concentration | PEC air (local+regional) | Justification |
| During emission mg/m³ | 1.18x10-3 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| Annual deposition mg/m2/d | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.502 | 1.38 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| Soil (direct releases only) | 0 | 6.88x10-3 | Not applicable. |
| | Value | Justification | |
| Concentration in sewage (PECstp) mg/l | 0.157 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 237 | EUSES calculation | |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Fresh water mg/l | 0.016 | 0.017 | EUSES calculation |
| Marine water mg/l | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | Local concentration | PEC sediment (local+regional) | Justification |

| | | | |
|---|---|---|---|
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 12.8 | 7.71 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |

| | | | |
|---|---|---|---|
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.046 | 0.160 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.091 | 0.204 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.60x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.55x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.14x10-3 | 2.14x10-3 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.86x10-3 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional<br>**Process Category:** PROC05, PROC08a<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional<br>**Process Category:** PROC05, PROC08a<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers percentage substance in the product up to 25%. |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Exposure duration per day: 15 min. to < 1 hour |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 95% |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 25% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Avoid carrying out operation for more than 15 minutes. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |

| | |
|---|---|
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 95% |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |

| | |
|---|---|
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |

| | |
|---|---|
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |

| | |
|---|---|
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0685714 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.365575 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.73115 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| Long term exposure, Systemic, Dermal | Not applicable. | 0.0685714 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Inhalable | Not applicable. | 0.45697 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| Long term exposure, Systemic, Combined | Not evaluated. | Not applicable. | Not applicable. |
| Long term exposure, Local, Dermal | Not applicable. | Not applicable. | Not applicable. |
| Long term exposure, Local, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Dermal | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Inhalable | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Systemic, Combined | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Dermal | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| Short term exposure, Local, Inhalable | Not applicable. | 0.91393 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 4.26 | 3.5 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 0.021 | 0.135 | EUSES calculation |
| Grassland averaged mg/kg dwt | 0.041 | 0.155 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |

| | | | |
|---|---|---|---|
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| Agricultural soil averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | Not evaluated. | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | Not evaluated. | 2.93x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.502 | 1.38 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| Soil (direct releases only) | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0.157 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Fresh water mg/l | 0.016 | 0.017 | EUSES calculation |
| Marine water mg/l | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| Fresh water sediment mg/kg dwt | Not evaluated. | 8.6 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| Agricultural soil averaged mg/kg dwt | 8.20x10-8 | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | 1.62x10-7 | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| During emission mg/m³ | 6.98x10-8 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0.012 | 1.82 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |

| | | | |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.056 | 28 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 0 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 14 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.018 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 26.5 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.74x10-3 | 3.17x10-3 | EUSES calculation |
| **Marine water mg/l** | 2.78x10-4 | 4.2x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 1.60 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.212 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.75x10-10 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 9.4x10-10 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 2.22x10-11 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.22x10-11 | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 4.01x10-11 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

**Section 4: Guidance to check compliance with the exposure scenario**

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

**Section 5. Remarks: Additional good practice advice beyond the REACH CSA**

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional<br>**Process Category:** PROC08a, PROC10, PROC11<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional<br>**Process Category:** PROC08a, PROC10, PROC11<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Exposure duration per day: 15 min. to < 1 hour |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Roller application or brushing**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 15% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Exposure duration per day: 15 min. to < 1 hour |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 95% |

**Section 2.1 Control of worker exposure**

**Contributing exposure scenario controlling worker exposure for 2: Non industrial spraying**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 10% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Exposure duration per day: 15 min. to < 1 hour |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

**Section 2.2: Control of environmental exposure**

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |

| | |
|---|---|
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |

| | |
|---|---|
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0411 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 1: Roller application or brushing**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.0822 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.457 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.914 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

**Section 3.1Workers Exposure estimation**

**Contributing exposure scenario controlling worker exposure for 2: Non industrial spraying**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.214 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.121 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |

| | | | |
|---|---|---|---|
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable. | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.243 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.502 | 1.38 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |

| | | | |
|---|---|---|---|
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.056 | 28 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 0 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 14 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.018 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 26.5 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.74x10-3 | 3.17x10-3 | EUSES calculation |
| **Marine water mg/l** | 2.78x10-4 | 4.2x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 1.60 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.212 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.75x10-10 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 9.4x10-10 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 2.22x10-11 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.22x10-11 | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 4.01x10-11 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

**Annex to the extended Safety Data Sheet (eSDS)**

**Professional**

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC08a, PROC11<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional<br>**Process Category:** PROC08a, PROC11<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Non industrial spraying**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 2% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Avoid carrying out activities involving exposure for more than 4 hours. |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90% |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |

| | |
|---|---|
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |

| | |
|---|---|
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |

| | |
|---|---|
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.09 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.61 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 1: Non industrial spraying**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.21 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

| | | | |
|---|---|---|---|
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.15 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 0.30 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | Not evaluated. | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | Not evaluated. | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | Not evaluated. | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | Not evaluated. | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| During emission mg/m³ | Not evaluated. | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | Not evaluated. | 2.93x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | Not evaluated. | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.502 | 1.38 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 2.51x10-4 | 6.88x10-4 | EUSES calculation |
| Soil (direct releases only) | 0 | 6.88x10-3 | Not applicable. |
| | Value | Justification | |
| Concentration in sewage (PECstp) mg/l | 0.157 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 237 | EUSES calculation | |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Fresh water mg/l | 0.016 | 0.017 | EUSES calculation |
| Marine water mg/l | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | Local concentration | PEC sediment (local+regional) | Justification |
| Fresh water sediment mg/kg dwt | Not evaluated. | 8.6 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.860 | EUSES calculation |
| | Local concentration | PEC soil (local+regional) | Justification |
| Agricultural soil averaged mg/kg dwt | 8.20x10-8 | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | 1.62x10-7 | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | Local concentration | PEC air (local+regional) | Justification |
| During emission mg/m³ | 6.98x10-8 | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | 6.92x10-9 | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0.012 | 1.82 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | Value | Justification | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | Local concentration | PEC sediment (local+regional) | Justification |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | **Release from point source (local exposure estimation) kg/day** | **Total release for regional exposure estimation kg/day** | **Justification** |
|---|---|---|---|
| **Waste water** | 0.056 | 28 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 0 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 14 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.018 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 26.5 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.74x10-3 | 3.17x10-3 | EUSES calculation |
| **Marine water mg/l** | 2.78x10-4 | 4.2x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 1.60 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.212 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.75x10-10 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 9.4x10-10 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 2.22x10-11 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.22x10-11 | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 4.01x10-11 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |

## Identification of the substance or mixture

| | |
|---|---|
| **Product definition** | Multi-constituent substance |
| **Product name** | Triethylenetetramine, TETA |

## Section 1: Title

| | |
|---|---|
| **Short title of the exposure scenario** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC08a, PROC11<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |
| **List of use descriptors** | **Identified use name:** Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional<br>**Process Category:** PROC08a, PROC11<br>**Substance supplied to that use in form of:** In a mixture<br>**Sector of end use:** SU22<br>**Subsequent service life relevant for that use:** No.<br>**Environmental Release Category:** ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b |

## Section 2: Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Not applicable. |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

### Section 2.1 Control of worker exposure

**Contributing exposure scenario controlling worker exposure for 1: Non industrial spraying**

| | |
|---|---|
| **Product Characteristics:** | Liquid. Covers concentrations up to 0.5% |
| **Amounts used:** | Not applicable. |
| **Frequency and duration of use:** | Covers daily exposures up to 8 hours (unless stated differently). |
| **Human factors not influenced by risk management:** | Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg |
| **Other operational conditions affecting worker exposure:** | Indoor. professional setting |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical conditions and measures to control dispersion from source towards the worker:** | Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90% |
| **Organisational measures to prevent/limit releases, dispersion and exposure:** | Not applicable. |
| **Personal protection:** | Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. |

## Section 2.2: Control of environmental exposure

**Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 4650 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 1160 |
| **Average Local Daily Tonnage (kg/day):** | 3867 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 300 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.10x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |

| | |
|---|---|
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 11636 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 100 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 25.1 |
| **Average Local Daily Tonnage (kg/day):** | 1255 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 20 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 6.88x10-4 |
| **Release fraction to soil from process (initial release prior to RMM):** | 6.88x10-3 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 1.38 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |

| | |
|---|---|
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 4: Processing aid**

Operational conditions: Indoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 2418 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 604 |
| **Average Local Daily Tonnage (kg/day):** | 2745 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 220 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 1.1x10-3 |
| **Release fraction to soil from process (initial release prior to RMM):** | 0 |
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | No wastewater treatment required. |
| **Conditions and measures related to municipal sewage treatment plant:** | |

**Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives**

Operational conditions: Indoor/Outdoor use.

| | |
|---|---|
| **Product Characteristics:** | Not applicable. |
| **Concentration of substance in mixture or article:** | |
| **Amounts used:** | |
| **Regional use tonnage (tonnes/year):** | 10230 |
| **Fraction of Regional tonnage used locally:** | 25% |
| **Annual site tonnage (tonnes/year):** | 2560 |
| **Average Local Daily Tonnage (kg/day):** | 7014 |
| **Frequency and duration of use:** | Continuous release. |
| **Emission Days (days/year):** | 365 |
| **Environmental factors not influenced by risk management:** | |
| **Local marine water dilution factor:** | 100 |
| **Other operational conditions of use affecting environmental exposure:** | None. |
| **Release fraction to air from process (initial release prior to RMM):** | 0 |
| **Release fraction to soil from process (initial release prior to RMM):** | 5.00x10-3 |

| | |
|---|---|
| **Release fraction to wastewater from process (initial release prior to RMM):** | 0.01 |
| **Technical conditions and measures at process level (source) to prevent release:** | Not applicable. |
| **Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:** | Soil emission controls are not applicable as there is no direct release to soil. |
| **Treat air emission to provide a typical removal efficiency of (%):** | No air emission controls required; required removal efficiency is 0%. |
| **Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of [3] (%):** | =>37.4 |
| **Conditions and measures related to municipal sewage treatment plant:** | |

## Section 3: Exposure estimation

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | Not applicable. | Not applicable. |

### Section 3.1Workers Exposure estimation

**Contributing exposure scenario controlling worker exposure for 1: Non industrial spraying**

| Route of exposure | Contributing scenarios | Dose/Concentration | Justification |
|---|---|---|---|
| **Long term exposure, Systemic, Dermal** | Not applicable. | 0.11 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Inhalable** | Not applicable. | 0.30 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |
| **Long term exposure, Systemic, Combined** | Not applicable. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Dermal** | Not evaluated. | Not applicable. | Not applicable. |
| **Long term exposure, Local, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |

| | | | |
|---|---|---|---|
| **Short term exposure, Systemic, Inhalable** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Systemic, Combined** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Dermal** | Not applicable | Not applicable. | Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. |
| **Short term exposure, Local, Inhalable** | Not applicable. | 1.22 | The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 4.26 | 3.5 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 0.021 | 0.135 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 0.041 | 0.155 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.35x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 1.18x10-3 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 9.74x10-4 | 9.74x10-4 | EUSES calculation |
| **Annual deposition mg/m2/d** | 1.76x10-4 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 3.1 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation | |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | Local concentration | PEC sediment (local+regional) | Justification |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |
| | Local concentration | PEC soil (local+regional) | Justification |
| Agricultural soil averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | Local concentration | PEC air (local+regional) | Justification |
| During emission mg/m³ | Not evaluated. | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | Not evaluated. | 2.93x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | Not evaluated. | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0 | 0 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 0 | 3.1 | EUSES calculation |
| Soil (direct releases only) | 0 | 0 | Not applicable. |
| | Value | Justification | |
| Concentration in sewage (PECstp) mg/l | 0 | EUSES calculation | |
| Concentration in sewage sludge mg/kg dwt | 0 | EUSES calculation | |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Fresh water mg/l | Not evaluated. | 1.43x10-3 | EUSES calculation |
| Marine water mg/l | Not evaluated. | 1.42x10-4 | EUSES calculation |
| Intermittent release. mg/l | Not applicable. | Not applicable. | Not applicable. |
| | Local concentration | PEC sediment (local+regional) | Justification |
| Fresh water sediment mg/kg dwt | Not evaluated. | 0.722 | EUSES calculation |
| Marine water sediment mg/kg dwt | Not evaluated. | 0.072 | EUSES calculation |
| | Local concentration | PEC soil (local+regional) | Justification |
| Agricultural soil averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Grassland averaged mg/kg dwt | Not evaluated. | 0.114 | EUSES calculation |
| Groundwater mg/l | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | Local concentration | PEC air (local+regional) | Justification |
| During emission mg/m³ | Not evaluated. | Not evaluated. | EUSES calculation |
| Annual average mg/m³ | Not evaluated. | 2.93x10-8 | EUSES calculation |
| Annual deposition mg/m2/d | Not evaluated. | Not evaluated. | EUSES calculation |
| | Local concentration | PEC aquatic (local+regional) | Justification |
| Micro-organism mg/l | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| Waste water | 0.502 | 1.38 | EUSES calculation |
| Surface water | 0 | 0 | EUSES calculation |
| air (direct + STP) | 2.51x10-4 | 6.88x10-4 | EUSES calculation |

| | | | |
|---|---|---|---|
| **Soil (direct releases only)** | 0 | 6.88x10-3 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0.157 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 237 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | 0.016 | 0.017 | EUSES calculation |
| **Marine water mg/l** | 1.56x10-3 | 1.70x10-3 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 8.6 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.860 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| **Agricultural soil averaged mg/kg dwt** | 8.20x10-8 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 1.62x10-7 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| **During emission mg/m³** | 6.98x10-8 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 3.82x10-9 | 3.31x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 6.92x10-9 | Not evaluated. | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 4: Processing aid

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0 | 0 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0.012 | 1.82 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 0 | Not applicable. |

| | Value | Justification |
|---|---|---|
| **Concentration in sewage (PECstp) mg/l** | 0 | EUSES calculation |
| **Concentration in sewage sludge mg/kg dwt** | 0 | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Fresh water mg/l** | Not evaluated. | 1.43x10-3 | EUSES calculation |
| **Marine water mg/l** | Not evaluated. | 1.42x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |

| | Local concentration | PEC sediment (local+regional) | Justification |
|---|---|---|---|
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 0.722 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.072 | EUSES calculation |

| | Local concentration | PEC soil (local+regional) | Justification |
|---|---|---|---|
| **Agricultural soil averaged mg/kg dwt** | 4.26x10-5 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 8.44x10-5 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |

| | Local concentration | PEC air (local+regional) | Justification |
|---|---|---|---|
| **During emission mg/m³** | 3.31x10-6 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.00x10-6 | 2.02x10-6 | EUSES calculation |
| **Annual deposition mg/m2/d** | 3.6x10-6 | Not evaluated. | EUSES calculation |

| | Local concentration | PEC aquatic (local+regional) | Justification |
|---|---|---|---|
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

## Section 3.2 Environment Exposure estimation

### Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

| | Release from point source (local exposure estimation) kg/day | Total release for regional exposure estimation kg/day | Justification |
|---|---|---|---|
| **Waste water** | 0.056 | 28 | EUSES calculation |
| **Surface water** | 0 | 0 | EUSES calculation |
| **air (direct + STP)** | 0 | 0 | EUSES calculation |
| **Soil (direct releases only)** | 0 | 14 | Not applicable. |
| | **Value** | **Justification** | |
| **Concentration in sewage (PECstp) mg/l** | 0.018 | EUSES calculation | |
| **Concentration in sewage sludge mg/kg dwt** | 26.5 | EUSES calculation | |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Fresh water mg/l** | 1.74x10-3 | 3.17x10-3 | EUSES calculation |
| **Marine water mg/l** | 2.78x10-4 | 4.2x10-4 | EUSES calculation |
| **Intermittent release. mg/l** | Not applicable. | Not applicable. | Not applicable. |
| | **Local concentration** | **PEC sediment (local+regional)** | **Justification** |
| **Fresh water sediment mg/kg dwt** | Not evaluated. | 1.60 | EUSES calculation |
| **Marine water sediment mg/kg dwt** | Not evaluated. | 0.212 | EUSES calculation |
| | **Local concentration** | **PEC soil (local+regional)** | **Justification** |
| **Agricultural soil averaged mg/kg dwt** | 4.75x10-10 | 0.114 | EUSES calculation |
| **Grassland averaged mg/kg dwt** | 9.4x10-10 | 0.114 | EUSES calculation |
| **Groundwater mg/l** | Not evaluated. | 1.13x10-3 | EUSES calculation |
| | **Local concentration** | **PEC air (local+regional)** | **Justification** |
| **During emission mg/m³** | 2.22x10-11 | Not evaluated. | EUSES calculation |
| **Annual average mg/m³** | 2.22x10-11 | 2.93x10-8 | EUSES calculation |
| **Annual deposition mg/m2/d** | 4.01x10-11 | Not evaluated. | EUSES calculation |
| | **Local concentration** | **PEC aquatic (local+regional)** | **Justification** |
| **Micro-organism mg/l** | Not applicable. | Not applicable. | Not applicable. |

### Section 4: Guidance to check compliance with the exposure scenario

| | |
|---|---|
| **Environment** | Not available. |
| **Health** | Not available. |

### Section 5. Remarks: Additional good practice advice beyond the REACH CSA

| | |
|---|---|
| **Environment** | Not applicable. |
| **Health** | Not applicable. |
| **Additional good practices** | Not applicable. |