Annex to Safety Data Sheet

ES FOR COMMUNICATION

Substance Name: potassium hydroxide

EC Number: 215-181-3

CAS Number: 1310-58-3

Registration Number: 01-2119487136-33-****

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Note: Extended Safety Data Sheet (shorted as eSDS) composed of Safety Data Sheet and Annex to Safety Data Sheet shall be supplied to your EU importers for the above registered substance according to EU REACH regulation. Please remember to supply this Annex to your EU importers together with Safety Data Sheet.

Declaration:

This document of exposure scenarios(ES) for Safety Data Sheets is made according to Article 31(7) of Regulation (EU) No. 1907/2006 (REACH), *Any actor in the supply chain who is required to prepare a chemical safety report according to Articles 14 or 37 shall place the relevant exposure scenarios (including use and exposure categories where appropriate) in an annex to the safety data sheet covering identified uses and including specific conditions resulting from the application of section 3 of Annex XI*. The document is made based on the exposure scenarios(ES) in Chemical Safety Report(CSR)provided by the client or lead registrants who prepared the CSR. If downstream users receive the document and find any mistakes, please give feedbacks to REACH24H. REACH24H will contact with the client or lead registrants to check the mistakes. If the CSR is updated, this ES communication document will be updated accordingly and transfer to the downstream users.

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1. ES 1: Formulation or re-packing - Formulation of cleaning agents and reagents for detection

1.1. Title section

Environment contributing scenario(s):		
CS 1	Formulation into mixture	ERC 2
Worker contributing scenario(s):		
CS 2	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	PROC 8a

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC 2)

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 15 tonnes/day
• Annual use amount at site: <= 1.5E3 tonnes/year
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
• Discharge rate of STP: >= 2E3 m3/day
• Application of the STP sludge on agricultural soil: Yes
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1.8E4 m3/day

1.2.2. Control of worker exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (PROC 8a)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	

	Method
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation into mixture (ERC 2)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 300 kg/day
Air	ERC	**Release factor before on site RMM:** 2.5% **Release factor after on site RMM:** 2.5% **Local release rate:** 375 kg/day
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.01%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 0.029 mg/m³	RCR = 0.029

1.3.2. Worker exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (PROC 8a)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	1 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded

performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for worker(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment

For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	Hazard conclusion

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

2. ES 2: Use at industrial sites - intermediate

2.1. Title section

Environment contributing scenario(s):		
CS 1	Use as intermediate	ERC 6a
Worker contributing scenario(s):		
CS 2	Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition	PROC 1
CS 3	Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition	PROC 2
CS 4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 5	Chemical production where opportunity for exposure arises	PROC 4
CS 6	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC 8a
CS 7	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC 8b

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure Use as intermediate (ERC 6a)

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 15 tonnes/day
• Annual use amount at site: <= 1.5E3 tonnes/year
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
• Discharge rate of STP: >= 2E3 m3/day
• Application of the STP sludge on agricultural soil: Yes
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1.8E4 m3/day

2.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition (PROC 1)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0

	Method
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

2.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition (PROC 2)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

2.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

2.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

2.2.6. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

2.2.7. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Use as intermediate (ERC 6a)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 300 kg/day
Air	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5% **Local release rate:** 750 kg/day
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.1%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 0.057 mg/m³	RCR = 0.057

2.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition (PROC 1)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.01 mg/m³ (TRA Workers)	RCR = 0.01
Dermal, local, long term	9.92E-3 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	9.92E-3 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

2.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition (PROC 2)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.01 mg/m³ (TRA Workers)	RCR = 0.01
Dermal, local, long term	0.2 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	0.2 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

2.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.1 mg/m³ (TRA Workers)	RCR = 0.1
Dermal, local, long term	0.201 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	0.201 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

2.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk quantification

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	1 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

2.3.6. Worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	1 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

2.3.7. Worker exposure: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure concentration	Risk quantification

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.1 mg/m³ (TRA Workers)	RCR = 0.1
Dermal, local, long term	1 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for worker(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)

Route	Type of effect	Risk characterisation type	Hazard conclusion
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment
For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

3. ES 3: Use at industrial sites - Reactive processing aid-industrial

3.1. Title section

Environment contributing scenario(s):		
CS 1	Use of reactive processing aid at industrial site (no inclusion into/onto articles)	ERC 6b
Worker contributing scenario(s):		
CS 2	Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition	PROC 1
CS 3	Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition	PROC 2
CS 4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 5	Chemical production where opportunity for exposure arises	PROC 4

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Use of reactive processing aid at industrial site (no inclusion into/onto articles) (ERC 6b)

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 15 tonnes/day
• Annual use amount at site: <= 1.5E3 tonnes/year
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
• Discharge rate of STP: >= 2E3 m3/day
• Application of the STP sludge on agricultural soil: Yes
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1.8E4 m3/day

3.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition (PROC 1)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	

	Method
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

3.2.3. Control of environmental exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition (PROC 2)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

3.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

	Method

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

3.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Use of reactive processing aid at industrial site (no inclusion into/onto articles) (ERC 6b)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5% **Local release rate:** 750 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1% **Local release rate:** 15 kg/day
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.025%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 1.14E-3 mg/m³	RCR < 0.01

3.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition (PROC 1)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.01 mg/m³ (TRA Workers)	RCR = 0.01
Dermal, local, long term	9.92E-3 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	9.92E-3 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

3.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition (PROC 2)

Route of exposure and type of effects	Exposure concentration	Risk quantification

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.01 mg/m³ (TRA Workers)	RCR = 0.01
Dermal, local, long term	0.2 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	0.2 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

3.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.1 mg/m³ (TRA Workers)	RCR = 0.1
Dermal, local, long term	0.201 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	0.201 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

3.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk quantification

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	1 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for worker(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment
For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	**Hazard conclusion**
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

4. ES 4: Use at industrial sites - Extraction

4.1. Title section

Environment contributing scenario(s):		
CS 1	Use of reactive processing aid at industrial site (no inclusion into/onto articles)	ERC 6b
Worker contributing scenario(s):		
CS 2	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 3	Chemical production where opportunity for exposure arises	PROC 4

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Use of reactive processing aid at industrial site (no inclusion into/onto articles) (ERC 6b)

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 15 tonnes/day
• Annual use amount at site: <= 1.5E3 tonnes/year
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
• Discharge rate of STP: >= 2E3 m3/day
• Application of the STP sludge on agricultural soil: Yes
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1.8E4 m3/day

4.2.2. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0

	Method
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

4.2.3. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Use of reactive processing aid at industrial site (no inclusion into/onto articles) (ERC 6b)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5% **Local release rate:** 750 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1%

Release	Release estimation method	Explanations
		Release factor after on site RMM: 0.1% **Local release rate:** 15 kg/day
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.025%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 1.14E-3 mg/m³	RCR < 0.01

4.3.2. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.1 mg/m³ (TRA Workers)	RCR = 0.1
Dermal, local, long term	0.201 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	0.201 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

4.3.3. Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	1 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for worker(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment
For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing

scenario.

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

5. ES 5: Widespread use by professional workers - Wide dispersive indoor & outdoor use of detergents by professional

5.1. Title section

Environment contributing scenario(s):		
CS 1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC 8a
CS 2	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)	ERC 8b
CS 3	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8d
CS 4	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8e
Worker contributing scenario(s):		
CS 5	Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition	PROC 1
CS 6	Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition	PROC 2
CS 7	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 8	Chemical production where opportunity for exposure arises	PROC 4
CS 9	Industrial spraying	PROC 7
CS 10	Roller application or brushing	PROC 10
CS 11	Hand-mixing with intimate contact and only PPE available	PROC 19

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

5.2.2. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Amount used, frequency and duration of use (or from service life)

• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

5.2.3. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8d)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

5.2.4. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8e)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

5.2.5. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or process with equivalent containment condition (PROC 1)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	

	Method
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

5.2.6. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition (PROC 2)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

5.2.7. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0

	Method
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

5.2.8. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

5.2.9. Control of worker exposure: Industrial spraying (PROC 7)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0

	Method
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

5.2.10. Control of worker exposure: Roller application or brushing (PROC 10)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

5.2.11. Control of worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0

	Method
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100% **Local release rate:** 0.825 kg/day
Air	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

5.3.2. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1%

Release	Release estimation method	Explanations
		Release factor after on site RMM: 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

5.3.3. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8d)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100% **Local release rate:** 0.825 kg/day
Air	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100%
Non agricultural soil	ERC	**Release factor after on site RMM:** 20%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

5.3.4. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8e)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 1%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

5.3.5. Worker exposure: Chemical production or refinery in closed process without likelihood of

exposure or process with equivalent containment condition (PROC 1)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.01 mg/m³ (TRA Workers)	RCR = 0.01
Dermal, local, long term	9.92E-3 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	9.92E-3 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

5.3.6. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or process with equivalent containment condition (PROC 2)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.01 mg/m³ (TRA Workers)	RCR = 0.01
Dermal, local, long term	0.2 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	0.2 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

5.3.7. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

Route of exposure and type of effects	Exposure concentration	Risk quantification

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.1 mg/m³ (TRA Workers)	RCR = 0.1
Dermal, local, long term	0.201 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	0.201 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

5.3.8. Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	1 mg/m³ (TRA Workers)	RCR = 1
Dermal, local, long term	1 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

5.3.9. Worker exposure: Industrial spraying (PROC 7)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	1 mg/m³ (TRA Workers)	RCR = 1
Dermal, local, long term	2 mg/cm² (TRA Workers)	Qualitative risk

Route of exposure and type of effects	Exposure concentration	Risk quantification
Dermal, local, acute	2 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

5.3.10. Worker exposure: Roller application or brushing (PROC 10)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	2 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	2 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

5.3.11. Worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	5 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	5 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.

Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for worker(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment

For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

6. ES 6: Widespread use by professional workers - wide dispersive indoor & outdoor use of paint strippers and drain deblockers by professionals

6.1. Title section

Environment contributing scenario(s):		
CS 1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC 8a
CS 2	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)	ERC 8b
CS 3	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8d
CS 4	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8e
Worker contributing scenario(s):		
CS 5	Roller application or brushing	PROC 10
CS 6	Non industrial spraying	PROC 11
CS 7	Treatment of articles by dipping and pouring	PROC 13

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

6.2.2. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

6.2.3. Control of environmental exposure: Widespread use of non-reactive processing aid (no

inclusion into or onto article, outdoor) (ERC 8d)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

6.2.4. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8e)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

6.2.5. Control of worker exposure: Roller application or brushing (PROC 10)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

6.2.6. Control of worker exposure: Non industrial spraying (PROC 11)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

6.2.7. Control of worker exposure: Treatment of articles by dipping and pouring (PROC 13)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100% **Local release rate:** 0.825 kg/day
Air	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

6.3.2. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

6.3.3. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8d)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100% **Local release rate:** 0.825 kg/day
Air	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100%
Non agricultural soil	ERC	**Release factor after on site RMM:** 20%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

6.3.4. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8e)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 1%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

6.3.5. Worker exposure: Roller application or brushing (PROC 10)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	2 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	2 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

6.3.6. Worker exposure: Non industrial spraying (PROC 11)

Route of exposure and type of effects	Exposure concentration	Risk quantification

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	1 mg/m³ (TRA Workers)	RCR = 1
Dermal, local, long term	5 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	5 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

6.3.7. Worker exposure: Treatment of articles by dipping and pouring (PROC 13)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	1.999 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1.999 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for worker(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment

For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

7. ES 7: Widespread use by professional workers - cosmetics, personal care and fragrances

7.1. Title section

Environment contributing scenario(s):		
CS 1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC 8a
CS 2	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)	ERC 8b
Worker contributing scenario(s):		
CS 3	Roller application or brushing	PROC 10
CS 4	Non industrial spraying	PROC 11
CS 5	Treatment of articles by dipping and pouring	PROC 13
CS 6	Hand-mixing with intimate contact and only PPE available	PROC 19

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

7.2.2. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0.013%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

7.2.3. Control of worker exposure: Roller application or brushing (PROC 10)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0

	Method
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

7.2.4. Control of worker exposure: Non industrial spraying (PROC 11)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

7.2.5. Control of worker exposure: Treatment of articles by dipping and pouring (PROC 13)

	Method
Product (article) characteristics	

	Method
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

7.2.6. Control of worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Workers 3.0
• Physical form of the used product: Solid (material with low dustiness)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Room ventilation: Basic (up to 3 ACH)	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	TRA Workers 3.0
• Respiratory protection: No	TRA Workers 3.0
• Face/eye protection: No	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40 °C	TRA Workers 3.0

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100% **Local release rate:** 0.825 kg/day
Air	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

7.3.2. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

7.3.3. Worker exposure: Roller application or brushing (PROC 10)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	2 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	2 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

7.3.4. Worker exposure: Non industrial spraying (PROC 11)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	1 mg/m³ (TRA Workers)	RCR = 1
Dermal, local, long term	5 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	5 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

7.3.5. Worker exposure: Treatment of articles by dipping and pouring (PROC 13)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	1.999 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	1.999 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment)according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category

"High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

7.3.6. Worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	0.5 mg/m³ (TRA Workers)	RCR = 0.5
Dermal, local, long term	5 mg/cm² (TRA Workers)	Qualitative risk
Dermal, local, acute	5 mg/cm² (TRA Workers)	Qualitative risk

Remarks on exposure dataset obtained with ECETOC TRA

The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-6 Pa.
Local exhaust ventilation effectiveness used by TRA: inhalation 0 %

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for worker(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects -	Not needed	No hazard identified

Route	Type of effect	Risk characterisation type	Hazard conclusion
	acute		
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment

For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

8. ES 8: Consumer use - cosmetic, personal care, fragrances

8.1. Title section

Environment contributing scenario(s):		
CS 1	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC 8a
CS 2	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)	ERC 8b
CS 3	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8d
CS 4	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8e
Consumer contributing scenario(s):		
CS 5	Non-Metal-surface treatment products	PC 15

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 0.013%]

8.2.2. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 0.013%]

8.2.3. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8d)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)

• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 0.013%]

8.2.4. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8e)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 0.013%]

8.2.5. Control of worker exposure: Non-Metal-surface treatment products (PC 15)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Consumers 3.1 (R15)
• Physical form of the used product: Solid (non or low dusty form)	
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Yes	TRA Consumers 3.1 (R15)
• Spray: No	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Amount of product used per application: <= 5E3 g/event	TRA Consumers 3.1 (R15)
• Exposure time per event: = 8 h/event	TRA Consumers 3.1 (R15)
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)
• Place of use: Indoor	TRA Consumers 3.1 (R15)

	Method
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Hands	TRA Consumers 3.1 (R15)
• Inhalation transfer factor: = 1	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1	TRA Consumers 3.1 (R15)
• Oral transfer factor: = 1	TRA Consumers 3.1 (R15)
• Volume of product swallowed: <= 100 cm3	TRA Consumers 3.1 (R15)

8.3. Exposure estimation and reference to its source

8.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC 8a)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100% **Local release rate:** 0.825 kg/day
Air	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

8.3.2. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

8.3.3. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8d)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100% **Local release rate:** 0.825 kg/day
Air	ERC	**Release factor before on site RMM:** 100% **Release factor after on site RMM:** 100%
Non agricultural soil	ERC	**Release factor after on site RMM:** 20%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

8.3.4. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8e)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 1%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

8.3.5. Worker exposure: Non-Metal-surface treatment products (PC 15)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	2.26E-5 mg/m³ (TRA Consumers)	RCR < 0.01

Remarks on exposure dataset obtained with ECETOC TRA

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category "High hazard". Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

8.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for general population(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Oral	Systemic effects - long term	Not needed	No hazard identified
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment
For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation

9. ES 9: Consumer use - batteries

9.1. Title section

Environment contributing scenario(s):		
CS 1	Widespread use of functional fluid (indoor)	ERC 9a
CS 2	Widespread use of functional fluid (outdoor)	ERC 9b
Consumer contributing scenario(s):		
CS 3	Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents	PC 20

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Widespread use of functional fluid (indoor) (ERC 9a)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 0.013%]

9.2.2. Control of environmental exposure: Widespread use of functional fluid (outdoor) (ERC 9b)

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 0.013%]

9.2.3. Control of worker exposure: Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents (PC 20)

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Consumers 3.1 (R15)
• Physical form of the used product: Solid (non or low dusty form)	
• Exposure via inhalation route: Yes	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1

	Method
	(R15)
• Exposure via oral route: Yes	TRA Consumers 3.1 (R15)
• Spray: No	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Amount of product used per application: <= 5E3 g/event	TRA Consumers 3.1 (R15)
• Exposure time per event: = 8 h/event	TRA Consumers 3.1 (R15)
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed	TRA Consumers 3.1 (R15)
• Place of use: Indoor	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Body parts potentially exposed	TRA Consumers 3.1 (R15)
• Inhalation transfer factor: = 1	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1	TRA Consumers 3.1 (R15)
• Oral transfer factor: = 1	TRA Consumers 3.1 (R15)
• Volume of product swallowed: <= cm3	TRA Consumers 3.1 (R15)

9.3. Exposure estimation and reference to its source

9.3.1. Environmental release and exposure: Widespread use of functional fluid (indoor) (ERC 9a)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5% **Local release rate:** 0.041 kg/day
Air	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5%
Non agricultural	ERC	**Release factor after on site RMM:** 0%

Release	Release estimation method	Explanations
soil		

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

9.3.2. Environmental release and exposure: Widespread use of functional fluid (outdoor) (ERC 9b)

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5% **Local release rate:** 0.041 kg/day
Air	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5%
Non agricultural soil	ERC	**Release factor after on site RMM:** 5%

Protection target	Exposure concentration	Risk quantification
Man via environment - Inhalation (local effects)	**Concentration in air:** 4.15E-12 mg/m³	RCR < 0.01

9.3.3. Worker exposure: Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents (PC 20)

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, local, long term	2.26E-5 mg/m³ (TRA Consumers)	RCR < 0.01

Remarks on exposure dataset obtained with ECETOC TRA

Risk characterisation

Qualitative risk characterisation (Dermal, local, long term, Dermal, local, acute, Eye, local):
The most prominent effect of the substance towards workers is the dermal local long term/ short term and eye local toxicity for which no DNEL can be derived. Therefore, it is concluded that the control of potential exposure to the substance in terms of dermal/eye requires appropriate moderate level of RMM and OCs for dermal/eye route. In that case ECHA has commanded performing a qualitative- instead of a quantitative -risk assessment) according to ECHA 2008, Guidance on information requirement and chemical safety assessment, chapter E): The substance is classified R35 which leads to the hazard category “High hazard”. Therefore,personal protective equipment such as face shield, appropriate gloves, chemical goggles and further technical and organisational measures apply, such as, work procedures minimising of splashes and spills, training for staff on good practice, good standard of personal hygiene are requried.

9.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Human

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL for general population(given that the processes and activities in question are covered by the PROCs listed above) as given below:

Route	Type of effect	Risk characterisation type	Hazard conclusion
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Quantitative	DNEL (Derived No Effect Level) = 1 mg/m³
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Qualitative	High hazard (no threshold derived)
	Local effects - acute	Qualitative	High hazard (no threshold derived)
Oral	Systemic effects - long term	Not needed	No hazard identified
Eye	Local effects	Qualitative	High hazard (no threshold derived)

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA www.ecetoc.org to estimate the associated exposure.

Environment

For Environmental exposure, if the operation conditions described above in the contributing scenario are met, and risk management measures are already carried out, it can be regarded the use of DU or their customers has been covered by this exposure scenario, and the risk is controlled.

If the OC and RMM is not well matched with what described above in the contributing scenario, DU can make use of an appropriate scaling tool such as EUSES 2.1.2 by use of the assessment method given at the beginning of contributing scenario.

Compartment	Hazard conclusion
Freshwater	no data available: testing technically not feasible
Marine water	no data available: testing technically not feasible
Intermittent releases to water	no data available: testing technically not feasible
Sediments (freshwater)	no exposure of sediment expected

Compartment	Hazard conclusion
Sediments (marine water)	no exposure of sediment expected
Sewage treatment plant	no data available: testing technically not feasible
Soil	no exposure of soil expected
Air	no hazard identified
Secondary poisoning	No potential for bioaccumulation