Annex

Exposure Scenarios

Substance information:

Name of substance: 2-(4-tert-Butylbenzyl)propionaldehyde.
EC# 201-289-8 / CAS# 80-54-6
REACH Registration number: 01-2119907954-30-0000.

List of exposure scenarios:

ES1: Use at industrial sites - Use as an intermediate
ES2: Formulation - Formulation of fragrance compounds
ES3: Formulation - Formulation of fragranced end-products
ES4: Consumer use - Industrial, Professional and Consumer end-use of washing and cleaning products
ES5: Consumer use - Consumer and professional end-use of polishes and wax blends
ES6: Consumer use - Consumer end-use of air care products
ES7: Consumer use - Consumer end-use of biocides
ES8: Consumer use - Professional and consumer end-use of cosmetics
ES9: Service life (consumers) - Use of substance in scented articles

General remarks:

The first tier environmental exposure assessments have at first instance been performed using EUSES v2.1 which is part of Chemical Safety Assessment and Reporting tool version 2.3 (CHESAR v2.3). Higher tier assessments have been performed if safe use was not demonstrated using first tier assessments. In these cases Specific Environmental Release Categories (SpERCs) have been used.

The first tier worker exposure assessments have at first instance been performed using Worker TRA v3 which is part of Chemical Safety Assessment and Reporting tool version 2.3 (CHESAR v2.3).

The TRA Consumers 3.0 tool has been used to estimate consumer exposures unless otherwise indicated. 2-(4-tert-butylbenzyl)-propionaldehyde is present at low levels as a fragrance substance in fragrances found in consumer products including household care and maintenance and air freshener products and scented articles such as candles. 2-(4-tert-butylbenzyl)-propionaldehyde is incorporated at <5% in fragrance mixtures (pre-formulations), which are then sold and incorporated into final consumer products at low levels (nominally 0.1% and lower).

Reference: IFRA REACH Exposure scenarios for Fragrance Substances. Version 2.1/11 December 2012.

Exposure scenario (1): Use at industrial sites - Use as an intermediate

1. Exposure scenario (1)

Short title of the exposure scenario:
Use at industrial sites - Use as an intermediate

List of use descriptors:
Sector of use category (SU): SU8
Process category (PROC): PROC1, PROC2, PROC8b
Environmental release category (ERC): ERC6a (SpERC IFRA 2.1a.v1)

List of names of contributing worker scenarios and corresponding PROCs:
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

Name of contributing environmental scenario and corresponding ERCs:
ERC6a Use of intermediate.

Further explanations:
Industrial application.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

General:	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Wear chemical resistant gloves in combination with basic employee training. Chemical safety goggles recommended.
Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid.
Frequency and duration of use/exposure:	Duration: - PROC1: <=8 hours/day. - PROC2: <=4 hours/day. - PROC8b: <=1 hour/day.

Human factors not influenced by risk management:	Exposed skin surface: - PROC1: 240 cm2 (one hand, face side only). - PROC2, PROC8b: 480 cm2 (two hands, face side only).
Other given operational conditions affecting workers exposure:	Location: - PROC2, PROC8b: Indoor use. - PROC1: Outdoor use. Domain: Industrial use. Process temperature (for liquid): <= 40 °C.
Technical conditions and measures to control dispersion from source towards the worker:	General ventilation: - PROC1: Basic general ventilation (1-3 air changes per hour): 0%. - PROC2, PROC8b: Enhanced general ventilation (5-10 air changes per hour): 70%. Containment: - PROC1: Closed system (minimal contact during routine operations). - PROC2: Closed continuous process with occasional controlled exposure. - PROC8b: Semi-closed process with occasional controlled exposure. Local exhaust ventilation: - PROC1: Not required. - PROC2, PROC8b: Yes (95% effectiveness). Local exhaust ventilation (for dermal): - PROC1: Not required. - PROC2, PROC8b: Yes (95% effectiveness). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles recommended. Dermal protection: - PROC1: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (minimum efficiency dermal: 90%). - PROC2, PROC8b: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (minimum efficiency dermal: 95%)
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Use Local Exhaust ventilation. Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure	
General:	All risk management measures utilised must also comply with all relevant local regulations.
Product characteristics:	Concentration of substance: Up to 100%. Physical state: liquid.
Amounts used:	Maximum daily use at a site: 1.25 ton/day. Maximum annual use at a site: 125 tons/year. Percentage of tonnage used at regional scale: 100 %.
Frequency and duration of use:	Emission days: 100 days/year.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Industrial use. Release fraction to air from process (initial release): 0.00025; (final release): 0.00025. Local release rate: 0.312 kg/day (SpERC IFRA 2.1a.v1). Release fraction to wastewater from process (initial release): 0.00002; (final release): 0.000002. Local release rate: 0.002 kg/day (SpERC IFRA 2.1a.v1) Release fraction to soil from process (final release): 0.0 (SpERC IFRA 2.1a.v1). On-site treatment of wastewater: Physico-chemical treatment - Not applied (Effectiveness Water: 0%). On-site biological treatment: Not applied (Effectiveness Water: 0%).
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). Onsite pre-treatment of waste water: Prevention of release to external waste water (Based on emissions values of a STP in EUSES 11.4% would be released to waste water) (Effectiveness Water: 90%).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Health

Information for contributing scenario (1): PROC8b

Assessment method: CHESAR v2.3 Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	Route	Exposure estimate	RCR	Notes
Worker, long-term, systemic	Dermal	0.034 mg/kg bw/day	0.301	PROC8b
Worker, long-term, systemic	Inhalation	0.128 mg/m3	0.635	PROC8b
Worker, long-term, systemic	Combined routes	N/A	0.936	PROC8b
Worker, long-term, local	Dermal	0.002 mg/cm2	<0.01	PROC8b

Environment

Information for contributing scenario (2): ERC6a (SpERC IFRA 2.1a.v1)

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006783 mg/L	0.332	
Marine water	0.00006113 mg/L	0.255	
Soil	0.0004222 mg/kg dw	<0.01	
STP	0.0001423 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Duration: PROC1: <=8 hours/day. PROC2: <=4 hours/day. PROC8b: <=1 hour/day. Dermal protection: PROC1: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (minimum efficiency dermal: 90%). PROC2, PROC8b: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (minimum efficiency dermal: 95%) Concentration of substance: Up to 100%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (2): Formulation - Formulation of fragrance compounds

1. Exposure scenario (2)

Short title of the exposure scenario:

Formulation - Formulation of fragrance compounds

List of use descriptors:

Process category (PROC): PROC1, PROC2, PROC3, PROC5, PROC8b, PROC9, PROC15

Environmental release category (ERC): ERC2 (SpERC IFRA 2.1a.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

PROC15 Use as laboratory reagent. Use of substances at small scale laboratory (< 1 l or 1 kg present at workplace).

Name of contributing environmental scenario and corresponding ERCs:

ERC2 Formulation into mixture.

Further explanations:

Industrial application.

Generic exposure scenario: IFRA GES 1 (IU1).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

General:	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Wear chemical resistant gloves in combination with basic employee training. Chemical safety goggles recommended.
Product characteristics:	Concentration of substance: - PROC3, PROC5, PROC8b, PROC9, PROC15: 5-25%. - PROC1, PROC2: Up to 100%. Physical state: liquid.
Frequency and duration of use/exposure:	Duration: - PROC1: <=8 hours/day. - PROC3: <=4 hours/day. - PROC5, PROC8b, PROC9: <=1 hour/day. - PROC2, PROC15: <=15 minutes.
Human factors not influenced by risk management:	Exposed skin surface: - PROC1, PROC3, PROC15: 240 cm2 (one hand, face side only). - PROC2, PROC5, PROC8b, PROC9: 480 cm2 (two hands, face side only).
Other given operational conditions affecting workers exposure:	Location: - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC15: Indoor use. - PROC1: Outdoor use. Domain: Industrial use. Process temperature (for liquid): <= 40 °C.
Technical conditions and measures to control dispersion from source towards the worker:	General ventilation: - PROC1: Basic general ventilation (1-3 air changes per hour): 0%. - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC15: Enhanced general ventilation (5-10 air changes per hour): 70%. Containment: - PROC1: Closed system (minimal contact during routine operations). - PROC2: Closed continuous process with occasional controlled exposure. - PROC3: Closed batch process with occasional controlled exposure. - PROC8b, PROC9: Semi-closed process with occasional controlled exposure. - PROC5, PROC15: No. Local exhaust ventilation: - PROC1: Not required. - PROC15: Yes (90% effectiveness). - PROC2, PROC3, PROC5, PROC8b, PROC9: Yes (95% effectiveness). Local exhaust ventilation (for dermal): - PROC1, PROC15: Not required. - PROC2, PROC3, PROC5, PROC8b, PROC9: Yes (95% effectiveness). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles recommended. Dermal protection: - PROC1, PROC15: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (minimum efficiency dermal: 90%). - PROC2, PROC3, PROC5, PROC8b, PROC9: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (minimum efficiency dermal: 95%)
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Use Local Exhaust ventilation. Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure	
General:	All risk management measures utilised must also comply with all relevant local regulations.
Product characteristics:	Physical state: liquid.
Amounts used:	Maximum daily use at a site: 0.038 ton/day. Maximum annual use at a site: 3.75 tons/year. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: 100 days/year.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).

Other given operational conditions affecting environmental exposure:	Industrial use. Release fraction to air from process (initial release): 0.00025; (final release): 0.00025. Local release rate: 0.009 kg/day (SpERC IFRA 2.1a.v1). Release fraction to wastewater from process (initial release): 0.00002; (final release): 0.000006. Local release rate: 0.000225 kg/day (SpERC IFRA 2.1a.v1) Release fraction to soil from process (final release): 0.0 (SpERC IFRA 2.1a.v1). On-site treatment of wastewater: Physico-chemical treatment (Effectiveness Water: 70%). On-site biological treatment: Not applied (Effectiveness Water: 0%).
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Health

Information for contributing scenario (1): PROC3, PROC5, PROC15

Assessment method: CHESAR v2.3 Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	Route	Exposure estimate	RCR	Notes
Worker, long-term, systemic	Dermal	0.041 mg/kg bw/day	0.289	PROC5
Worker, long-term, systemic	Inhalation	0.276 mg/m3	0.549	PROC3
Worker, long-term, systemic	Combined routes	N/A	0.594	PROC5
Worker, long-term, local	Dermal	0.006 mg/cm2	0.012	PROC15

Environment

Information for contributing scenario (2): ERC2 (SpERC IFRA 2.1a.v1)

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006654 mg/L	0.326	
Marine water	0.00005984 mg/L	0.249	
Soil	0.0000638 mg/kg dw	<0.01	
STP	0.0000128 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Duration: PROC1: <=8 hours/day. PROC3: <=4 hours/day. PROC5, PROC8b, PROC9: <=1 hour/day. PROC2, PROC15: <=15 minutes. Dermal protection: PROC1, PROC15: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (minimum efficiency dermal: 90%). PROC2, PROC3, PROC5, PROC8b, PROC9: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (minimum efficiency dermal: 95%)Concentration of substance: PROC3, PROC5, PROC8b, PROC9, PROC15: 5-25%. PROC1, PROC2: Up to 100%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (3): Formulation - Formulation of fragranced end-products

1. Exposure scenario (3)

Short title of the exposure scenario:

Formulation - Formulation of fragranced end-products

List of use descriptors:

Product category (PC): PC3, PC8, PC28, PC31, PC35, PC39

Process category (PROC): PROC1, PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14, PROC15

Environmental release category (ERC): ERC2 (SpERC IFRA 2.1a.v1)

List of names of contributing worker scenarios and corresponding PROCs:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities. Transfer includes loading, filling, dumping, bagging.
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.
PROC14 Tabletting, compression, extrusion, pelletisation, granulation. This covers processing of mixtures and/or substances into a defined shape for further use.
PROC15 Use as laboratory reagent. Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace).

Name of contributing environmental scenario and corresponding ERCs:

ERC2 Formulation into mixture.

Further explanations:

Industrial application.
Generic exposure scenario: IFRA GES 2 (IU2).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

General:	Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Wear chemical resistant gloves in combination with basic employee training. Chemical safety goggles recommended.
Product characteristics:	Concentration of substance: - PROC1, PROC2: 5-25%. - PROC3, PROC5, PROC8b, PROC9, PROC14, PROC15: <1%. Physical state: liquid.
Frequency and duration of use/exposure:	Duration: - PROC1, PROC3, PROC5: <=8 hours/day. - PROC14: <=4 hours/day. - PROC8b, PROC9: <=1 hour/day. - PROC2, PROC15: <=15 minutes.
Human factors not influenced by risk management:	Exposed skin surface: - PROC1, PROC3, PROC15: 240 cm2 (one hand, face side only). - PROC2, PROC5, PROC8b, PROC9, PROC14: 480 cm2 (two hands, face side only).
Other given operational conditions affecting workers exposure:	Location: - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14, PROC15: Indoor use. - PROC1: Outdoor use. Domain: Industrial use. Process temperature (for liquid): <= 40 °C.
Technical conditions and measures to control dispersion from source towards the worker:	General ventilation: - PROC1: Basic general ventilation (1-3 air changes per hour): 0%. - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14, PROC15: Enhanced general ventilation (5-10 air changes per hour): 70%. Containment: - PROC1: Closed system (minimal contact during routine operations). - PROC2: Closed continuous process with occasional controlled exposure. - PROC3: Closed batch process with occasional controlled exposure. - PROC8b, PROC9: Semi-closed process with occasional controlled exposure. - PROC5, PROC14, PROC15: No. Local exhaust ventilation: - PROC1, PROC15: Not required. - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14: Yes (95% effectiveness). Local exhaust ventilation (for dermal): - PROC1, PROC2, PROC3, PROC8b, PROC9, PROC14, PROC15: Not required. - PROC5: Yes (95% effectiveness). Occupational Health and Safety Management System: Advanced.
Conditions and measures related to personal protection, hygiene and health evaluation:	Respiratory protection: Not required. Chemical safety goggles recommended. Dermal protection: - PROC1, PROC15: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (minimum efficiency dermal: 90%). - PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (minimum efficiency dermal: 95%)

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Use Local Exhaust ventilation. Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed.
2.2 Control of environmental exposure	
General:	All risk management measures utilised must also comply with all relevant local regulations.
Product characteristics:	Physical state: liquid.
Amounts used:	Maximum daily use at a site: 0.1 ton/day. Maximum annual use at a site: 30 tons/year. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: 300 days/year.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Industrial use. Release fraction to air from process (initial release): 0.00025; (final release): 0.00025. Local release rate: 0.025 kg/day (SpERC IFRA 2.1a.v1). Release fraction to wastewater from process (initial release): 0.00002; (final release): 0.00002. Local release rate: 0.002 kg/day (SpERC IFRA 2.1a.v1) Release fraction to soil from process (final release): 0.0 (SpERC IFRA 2.1a.v1). On-site treatment of wastewater: Physico-chemical treatment - Not applied (Effectiveness Water: 0%). On-site biological treatment: Not applied (Effectiveness Water: 0%).
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	Spills are cleaned immediately. All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Health

Information for contributing scenario (1): PROC2, PROC5, PROC8b, PROC9, PROC15

Assessment method: CHESAR v2.3 Worker TRA v3. Only highest figures are presented here.

Exposure estimation:

	Route	Exposure estimate	RCR	Notes
Worker, long-term, systemic	Dermal	0.034 mg/kg bw/day	0.603	PROC8b, PROC9
Worker, long-term, systemic	Inhalation	0.128 mg/m3	0.635	PROC5, PROC15
Worker, long-term, systemic	Combined routes	N/A	0.695	PROC15
Worker, long-term, local	Dermal	0.006 mg/cm2	0.015	PROC2

Environment

Information for contributing scenario (2): ERC2 (SpERC IFRA 2.1a.v1)

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006755 mg/L	0.331	
Marine water	0.00006085 mg/L	0.254	
Soil	0.0003408 mg/kg dw	<0.01	
STP	0.0001138 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Duration: PROC1, PROC3, PROC5: <=8 hours/day. PROC14: <=4 hours/day. PROC8b, PROC9: <=1 hour/day. PROC2, PROC15: <=15 minutes. Dermal protection: PROC1, PROC15: Yes (chemically resistant gloves conforming to EN374 with basic employee training) (minimum efficiency dermal: 90%). PROC2, PROC3, PROC5, PROC8b, PROC9, PROC14: Yes (chemically resistant gloves conforming to EN374 with specific activity training) (minimum efficiency dermal: 95%) Concentration of substance: PROC1, PROC2: 5-25%. PROC3, PROC5, PROC8b, PROC9, PROC14, PROC15: <1%.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (4): Consumer use - Industrial, Professional and Consumer end-use of washing and cleaning products

1. Exposure scenario (4)

Short title of the exposure scenario:

Consumer use - Industrial, Professional and Consumer end-use of washing and cleaning products

List of use descriptors:

Product category (PC): PC35
Environmental release category (ERC): ERC8a (SpERC AISE 8a.1a.v2)

Further explanations:

Consumer application.
Industrial application.
Professional application.
Generic exposure scenario: IFRA GES 3 (IU3); GES 4 (IU4); GES 6 (IU6).
PC35 - Laundry and dish washing products: AISE P102, P103, P105, P108, P111, P112, P113, P201, P202, P203, P204, P301, P302, P303, P304, P305, P306, P307, P308, P309, P310, P311, P312, P313, P314, P315, P316, P317, P401, P402, P403, P404, P405, P409, P410, P411, P606, P607, P701, P702, P703, P704, P705, P706, P808, P901, P902, P1101, P1102, P1103, P1104, C1, C2, C3, C4, C5, C6, C7, C8, C10, C11, C12, C15, C21, C22.

PC35 - Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners): AISE P102, P103, P105, P108, P111, P112, P113, P201, P202, P203, P204, P301, P302, P303, P304, P305, P306, P307, P308, P309, P310, P311, P312, P313, P314, P315, P316, P317, P401, P402, P403, P404, P405, P409, P410, P411, P606, P607, P701, P702, P703, P704, P705, P706, P808, P901, P902, P1101, P1102, P1103, P1104, C1, C2, C3, C4, C5, C6, C7, C8, C10, C11, C12, C15, C21, C22.

PC35 - Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners): AISE P102, P103, P105, P108, P111, P112, P113, P201, P202, P203, P204, P301, P302, P303, P304, P305, P306, P307, P308, P309, P310, P311, P312, P313, P314, P315, P316, P317, P401, P402, P403, P404, P405, P409, P410, P411, P606, P607, P701, P702, P703, P704, P705, P706, P808, P901, P902, P1101, P1102, P1103, P1104, C1, C2, C3, C4, C5, C6, C7, C8, C10, C11, C12, C15, C21, C22.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

2. Conditions of use affecting exposure

2.1 Control of consumer exposure

General:	An exposure assessment of substances classified as hazardous is not required if the concentration of the substance in the mixture (i.e. professional formulations or consumer end-products) is lower than the REACH regulatory limit as listed in REACH Article 14.2. Concentration of this substance in products for this application/use is typically significantly less than 0.1%.
Product characteristics:	Concentration of substance in mixture: Up to 0.0005 g/g. Oral contact foreseen: No.
Amounts used:	Applied amounts for each use event: - Laundry and dish washing products: 150 g. - Cleaners, liquids: 60 g. - Cleaners, trigger sprays: 30 g.
Frequency and duration of use/exposure:	Duration covers exposure up to: - Laundry and dish washing products: 1 hour/event. - Cleaners, liquids: 0.33 hour/event. - Cleaners, trigger sprays: 20 minutes/event. Frequency - covers use frequency: up to 1 time/day.
Human factors not influenced by risk management:	Exposed skin surface: - Laundry and dish washing products: Hands. - Cleaners, liquids; Cleaners, trigger sprays: Inside hand/one hand/palm of hand. Dermal transfer factor=0.01.

2.2 Control of environmental exposure

General:	All risk management measures utilised must also comply with all relevant local regulations.
Amounts used:	Daily wide dispersive use: 0.0000586 tons/day. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.

Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Industrial use. Indoor/Outdoor use. Professional use. Consumer use. Release fraction to air from process (initial release): 0.0; (final release): 0.0 (SpERC AISE 8a.1a.v2). Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 0.059 kg/day (SpERC AISE 8a.1a.v2). Release fraction to soil from process (final release): 0.0 (SpERC AISE 8a.1a.v2). Chemical waste - continuous generation: Spent fluid discharged to wastewater. Type of process: Substance applied in aqueous process solution with negligible volatilization.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Health

Information for contributing scenario (1): PC35 - Laundry and dish washing products

Assessment method: CHESAR V2.3 Consumer TRA v3. Only highest figures are presented here.

Exposure estimation:

	Route	Exposure estimate	RCR	Notes
Consumer, long-term, systemic	Dermal	0.0007146 mg/kg bw/day	0.021	Laundry and dish washing products
Consumer, long-term, systemic	Inhalation	0.023 mg/m3	0.395	Laundry and dish washing products
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0.01	Laundry and dish washing products
Consumer, long-term, systemic	Combined routes	N/A	0.416	Laundry and dish washing products
Consumer, long-term, local	Inhalation	0.023 mg/m3	0.395	Laundry and dish washing products

Environment

Information for contributing scenario (2): ERC8a (SpERC AISE 8a.1a.v2)

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.000997 mg/L	0.489	
Marine water	0.000093 mg/L	0.388	
Soil	0.009 mg/kg dw	0.197	
STP	0.003 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (5): Consumer use - Consumer and professional end-use of polishes and wax blends

1. Exposure scenario (5)

Short title of the exposure scenario:

Consumer use - Consumer and professional end-use of polishes and wax blends

List of use descriptors:

Product category (PC): PC31

Environmental release category (ERC): ERC8a (SpERC AISE 8a.1a.v2)

Name of contributing environmental scenario and corresponding ERCs:

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

Further explanations:

Consumer application.
Professional application.
Generic exposure scenario: IFRA GES 5 (IU5); GES 9 (IU9).
PC31: Polishes and wax blends: Polishes, wax/cream; Polishes, spray (furniture, shoes).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf).

2. Conditions of use affecting exposure

2.1 Control of consumer exposure

General:	An exposure assessment of substances classified as hazardous is not required if the concentration of the substance in the mixture (i.e. professional formulations or consumer end-products) is lower than the REACH regulatory limit as listed in REACH Article 14.2. Concentration of this substance in products for this application/use is typically significantly less than 0.1%.
Product characteristics:	Concentration of substance in mixture: Up to 0.001 g/g. Oral contact foreseen: No.
Amounts used:	Applied amounts for each use event: 30 g.
Frequency and duration of use/exposure:	Duration covers exposure up to: - Polishes, wax/cream: 4 hours/event. - Polishes, spray: 0.33 hour/event. Frequency - covers use frequency: up to 1 time/day.
Human factors not influenced by risk management:	Exposed skin surface: Inside hand/one hand/palm of hand. Dermal transfer factor=0.01.

2.2 Control of environmental exposure

General:	All risk management measures utilised must also comply with all relevant local regulations.
Amounts used:	Daily wide dispersive use: 0.0000021 tons/day. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Indoor/Outdoor use. Professional use. Consumer use. Release fraction to air from process (initial release): 0.0; (final release): 0.0 (SpERC AISE 8a.1a.v2). Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 0.002 kg/day (SpERC AISE 8a.1a.v2). Release fraction to soil from process (final release): 0.0 (SpERC AISE 8a.1a.v2). Chemical waste - continuous generation: Spent fluid discharged to wastewater. Type of process: Substance applied in aqueous process solution with negligible volatilization.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Health

Information for contributing scenario (1): PC31: Polishes and wax blends: Polishes, wax/cream; Polishes, spray

Assessment method: CHESAR V2.3 Consumer TRA v3. Only highest figures are presented here.

Exposure estimation:

	Route	Exposure estimate	RCR	Notes
Consumer, long-term, systemic	Dermal	0.0007147 mg/kg bw/day	0.021	
Consumer, long-term, systemic	Inhalation	0.441 mg/m3	0.620	Polishes, spray
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0.01	
Consumer, long-term, systemic	Combined routes	N/A	0.630	Polishes, spray
Consumer, long-term, local	Inhalation	0.441 mg/m3	0.620	Polishes, spray

Environment

Information for contributing scenario (2): ERC8a (SpERC AISE 8a.1a.v2)

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006761 mg/L	0.331	
Marine water	0.00006091 mg/L	0.254	
Soil	0.0003552 mg/kg dw	<0.01	
STP	0.0001195 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (6): Consumer use - Consumer end-use of air care products

1. Exposure scenario (6)

Short title of the exposure scenario:

Consumer use - Consumer end-use of air care products

List of use descriptors:

Product category (PC): PC3

Environmental release category (ERC): ERC8a (SpERC AISE 8a.1b.v2)

Name of contributing environmental scenario and corresponding ERCs:

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

Further explanations:

PC3 Air care products: Air care, instant action (aerosol sprays); Air care continuous action (solid and liquid).

Consumer application.

Generic exposure scenario: IFRA GES 7 (IU7).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

2. Conditions of use affecting exposure

2.1 Control of consumer exposure

General:	An exposure assessment of substances classified as hazardous is not required if the concentration of the substance in the mixture (i.e. professional formulations or consumer end-products) is lower than the REACH regulatory limit as listed in REACH Article 14.2. Concentration of this substance in products for this application/use is typically significantly less than 0.1%.
Product characteristics:	Concentration of substance in mixture: Up to 0.002 g/g. Oral contact foreseen: No.
Amounts used:	Applied amounts for each use event: - Air care, instant action (aerosol sprays): 1.4 g. - Air care continuous action (solid and liquid): 0.000029 g.
Frequency and duration of use/exposure:	Duration covers exposure up to: - Air care, instant action (aerosol sprays): 0.01 hour/event. - Air care continuous action (solid and liquid): 8 hours/event. Frequency - covers use frequency: - Air care, instant action (aerosol sprays): up to 4 times/day. - Air care continuous action (solid and liquid): up to 1 time/day.
Human factors not influenced by risk management:	Exposed skin surface: - Air care, instant action (aerosol sprays): dermal exposure negligible compared to inhalation. - Air care continuous action (solid and liquid): fingertips. Dermal transfer factor=0.01.

2.2 Control of environmental exposure

General:	All risk management measures utilised must also comply with all relevant local regulations.
Amounts used:	Daily wide dispersive use: 0.0000021 tons/day. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).

Other given operational conditions affecting environmental exposure:	Indoor/Outdoor use. Consumer use. Release fraction to air from process (initial release): 0.0; (final release): 0.0 (SpERC AISE 8a.1b.v2). Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 0.002 kg/day (SpERC AISE 8a.1b.v2). Release fraction to soil from process (final release): 0.0 (SpERC AISE 8a.1b.v2). Type of process: Spraying of involatile solids, which finally are disposed off via wastewater.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Health

Information for contributing scenario (1): PC3: Air care, instant action (aerosol sprays)

Assessment method: CHESAR V2.3 Consumer TRA v3. Only highest figures are presented here.

Exposure estimation:

	Route	Exposure estimate	RCR	Notes
Consumer, long-term, systemic	Dermal	0.00001488 mg/kg bw/day	<0.01	Air care, continuous action (solid and liquid)
Consumer, long-term, systemic	Inhalation	0.609 mg/m3	0.410	Air care, instant action (aerosol sprays)
Consumer, long-term, systemic	Oral	0 mg/kg bw/day	<0.01	
Consumer, long-term, systemic	Combined routes	N/A	0.420	Air care, instant action (aerosol sprays)
Consumer, long-term, local	Inhalation	0.609 mg/m3	0.410	Air care, instant action (aerosol sprays)

Environment

Information for contributing scenario (2): ERC8a (SpERC AISE 8a.1b.v2)

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006761 mg/L	0.331	
Marine water	0.00006091 mg/L	0.254	
Soil	0.0003552 mg/kg dw	<0.01	
STP	0.0001195 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

Health:	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (7): Consumer use - Consumer end-use of biocides

1. Exposure scenario (7)

Short title of the exposure scenario:

Consumer use - Consumer end-use of biocides

List of use descriptors:

Product category (PC): PC8

Environmental release category (ERC): ERC8a, ERC8d

Name of contributing environmental scenario and corresponding ERCs:

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).

Further explanations:

Consumer application.

Generic exposure scenario: IFRA GES 8 (IU8).
PC8 Biocidal products: AISE C19 Insecticides and repellents.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf).

2. Conditions of use affecting exposure

2.1 Control of consumer exposure

General:	An exposure assessment of substances classified as hazardous is not required if the concentration of the substance in the mixture (i.e. professional formulations or consumer end-products) is lower than the REACH regulatory limit as listed in REACH Article 14.2. Concentration of this substance in products for this application/use is typically significantly less than 0.1%.

2.2 Control of environmental exposure

General:	All risk management measures utilised must also comply with all relevant local regulations.
Amounts used:	Daily wide dispersive use: 0.0000021 tons/day. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18,000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Consumer use. Release fraction to air from process (initial release): 1.00; (final release): 1.00. Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 0.002 kg/day. Release fraction to soil from process (final release): 0.20.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC8a, ERC8d

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006761 mg/L	0.331	
Marine water	0.00006091 mg/L	0.254	
Soil	0.0003552 mg/kg dw	<0.01	
STP	0.0001195 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

Exposure scenario (8): Consumer use - Professional and consumer end-use of cosmetics

1. Exposure scenario (8)

Short title of the exposure scenario:
Consumer use - Professional and consumer end-use of cosmetics

List of use descriptors:
Product category (PC): PC28, PC39
Environmental release category (ERC): ERC8a (SpERC Cosmetics Europe 8a.1a.v2)

Name of contributing environmental scenario and corresponding ERCs:
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

Further explanations:
Consumer application.
Professional application.
Generic exposure scenario: IFRA GES 10 (IU10).
PC28: Perfumes, fragrances.
PC39: Cosmetics, personal care products.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/.

2. Conditions of use affecting exposure

2.1 Control of consumer exposure

General:	For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

2.2 Control of environmental exposure

General:	All risk management measures utilised must also comply with all relevant local regulations.
Amounts used:	Daily wide dispersive use: 0.0000027 tons/day. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Professional use. Indoor use. Consumer use. Release fraction to air from process (initial release): 0.0; (final release): 0.0 (SpERC Cosmetics Europe 8a.1a.v2). Release fraction to wastewater from process (initial release): 1.00; (final release): 1.00. Local release rate: 0.003 kg/day (SpERC Cosmetics Europe 8a.1a.v2). Release fraction to soil from process (final release): 0.0 (SpERC Cosmetics Europe 8a.1a.v2). Type of process: Substance applied in aqueous process solution with negligible volatilization.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC8a (SpERC Cosmetics Europe 8a.1a.v2)

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006795 mg/L	0.333	
Marine water	0.00006125 mg/L	0.255	
Soil	0.0004485 mg/kg dw	<0.01	
STP	0.0001536 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

Exposure scenario (9): Service life (consumers) - Use of substance in scented articles

1. Exposure scenario (9)

Short title of the exposure scenario:

Service life (consumers) - Use of substance in scented articles

List of use descriptors:

Environmental release category (ERC): ERC11a

Article category (AC): AC0

Name of contributing environmental scenario and corresponding ERCs:

ERC11a Widespread use of articles with low release (indoor).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf).

2. Conditions of use affecting exposure

2.1 Control of consumer exposure

General:	Fragranced end-products are available to consumers in the general public and in private households. A special case is the incorporation of fragrance compounds into fragranced articles. In the sense of REACH, the fragrance is a substance intended to be released from the article. However, articles containing fragrances are not considered since the concentrations of fragrance substances in these articles are below the REACH regulatory limit of 0.1%.

2.2 Control of environmental exposure

General:	All risk management measures utilised must also comply with all relevant local regulations.

Amounts used:	Daily wide dispersive use: 0.0000027 tons/day. Percentage of tonnage used at regional scale: 10 %.
Frequency and duration of use:	Emission days: <=365 days/year. Wide dispersive use.
Environmental factors not influenced by risk management:	Flow rate of receiving surface water: >=18000 m3/day (default).
Other given operational conditions affecting environmental exposure:	Consumer use. Release fraction to air from process (initial release): 0.0005; (final release): 0.0005. Release fraction to wastewater from process (initial release): 0.0005; (final release): 0.0005. Local release rate: 0.00000135 kg/day. Release fraction to soil from process (final release): 0.0.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Dry sludge application to agricultural soil: Yes (default).
Conditions and measures related to municipal sewage treatment plant:	Municipal Sewage Treatment Plant (STP): Yes (Efficiency=88.62%). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town).
Conditions and measures related to external treatment of waste for disposal:	Particular considerations on the waste treatment operations: No (low risk) (ERC based assessment demonstrating control of risk with default conditions. Low risk assumed for waste life stage. Waste disposal according to national/local legislation is sufficient.)
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply:	All risk management measures utilised must also comply with all relevant local regulations.

3. Exposure estimation and reference to its source

Environment

Information for contributing scenario (2): ERC11a

Assessment method: CHESAR v2.3 - EUSES v2,1.

Exposure estimation: Direct and indirect exposure of the sediment compartment is unlikely and the substance is readily biodegradable.

Compartment	PEC	RCR	Notes
Freshwater	0.0006642 mg/L	0.326	
Marine water	0.00005972 mg/L	0.249	
Soil	0.00002889 mg/kg dw	<0.01	
STP	0.00000007682 mg/L	<0.01	

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES

Environment:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.