

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

1.1 Product identifier

Trade name or designation of the mixture PersulfOx®
Registration number(s) 01-2119495975-15-0009; 01-2119448725-31-0076

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

Identified uses Soil and Groundwater Remediation.
Uses advised against None known

1.3 Details of the supplier of the safety data sheet

Company name RegenesiS Ltd.
Address Cambridge House
Henry Street
Bath, Somerset
BA1 1JS
United Kingdom
Telephone number +44 (0) 1225 618161
E-mail address CustomerService@regenesiS.com

1.4 Emergency telephone number

General in EU 112 (Available 24 hours a day. SDS/Product information may not be available for the
Emergency Service.)
CHEMTREC For Dangerous Goods Incidents ONLY (spill, leak, fire, exposure or accident), call
CHEMTREC 24/7 at:
International (+)1-703-527-3887
USA, Canada, Mexico (+)1-800-424-9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies

2.1.1 Classification according to Regulation (EC) No 1272/2008 (CLP)

Ox. Sol. 3: H272
Acute Tox. 4: H302
Skin Irrit. 2: H315
Skin Sens. 1: H317
Eye Irrit. 2: H319
Resp. Sens.1: H334
STOT SE 3: H335

2.2 Label elements

Hazard pictogram(s):



Signal Word

Danger

Hazard Statement(s)

H272 May intensify fire; oxidiser
 H302 Harmful if swallowed
 H315 Causes skin irritation
 H317 May cause an allergic skin reaction
 H318 Causes serious eye damage
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
 H335 May cause respiratory irritation

Precautionary Statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
 P220 Keep away from clothing and other combustible materials
 P280 Wear protective gloves, protective clothing, eye protection and face protection
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
 P305 + P351 + P338 IF IN EYES. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE or doctor.
 P310 CENTRE or doctor.
 P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTRE or doctor
 P370 + P378 In case of fire: Use water spray, fog (flooding amounts) to extinguish

2.3 Other hazards

The mixture does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Substance Name	EC No.	CAS No.	% w/w	REACH Registration No.	Index No.	Classification
Sodium persulfate	231-892-1	7775-27-1	≥90	01-2119495975-15-0009	N/A	Ox. Sol. 3: H272 Acute Tox. 4: H302 Skin Irrit. 2: H315 Skin Sens. 1: H317 Eye Irrit. 2: H319 Resp. Sens. 1: H334 STOT SE 3: H335
Silicic acid, sodium salt	215-687-4	1344-09-8	≤10	01-2119448725-31-0076	N/A	Skin Irrit. 2: H315 Eye Dam. 1: H318 STOT SE 3: H335

The full text for all H-statements is displayed in Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Take off all contaminated clothing and wash it before reuse. Call a POISON CENTRE or doctor if you feel unwell (show the label where possible).

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

Following inhalation	Remove person to fresh air and keep comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a POISON CENTRE or doctor.
Following skin contact	Take off contaminated clothing and wash it before reuse. If on skin: wash with plenty of water. If skin irritation or rash occurs: get medical advice/attention.
Following eye contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.
Following ingestion	Rinse mouth. Call a POISON CENTRE or doctor if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin and eyes. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

4.3 Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Symptoms may be delayed.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Water spray, fog (flooding amounts).
Unsuitable extinguishing media	Do not use water unless flooding amounts are available. Material reacts with water. Do not use carbon dioxide or other gas filled fire extinguishers; they will have no effect on decomposing persulfates

5.2 Special hazards arising from the substance or mixture

Greatly increases the burning rate of combustible materials. Containers may explode when heated. During fire, gases hazardous to health may be formed. Combustion products may include: Sulfur oxides.

5.3 Advice for firefighters

Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special firefighting procedures	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers.
Specific methods	Cool containers exposed to flames with water until well after the fire is out. Avoid dust formation

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep away from clothing and other combustible materials. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust. Do not touch damaged containers or spilled material unless
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For emergency responders wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

6.2 Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

6.3 Methods and material for containment and cleaning up

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect dust using a vacuum cleaner equipped with HEPA filter. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Keep combustibles (wood, paper, oil etc) away from spilled material. Ventilate the contaminated area. Stop the flow of material, if this is without risk. Spillage collected should be monitored for signs of reaction or decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water.

Large Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Minimise dust generation and accumulation. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. Place all material into loosely covered plastic containers for later disposal. Wear appropriate protective equipment and clothing during clean-up.

6.4 Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Minimise dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Keep away from heat. Provide appropriate exhaust ventilation at places where dust is formed. Take any precaution to avoid mixing with combustibles. Keep away from clothing and other combustible materials. Do not taste or swallow. Avoid contamination. Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not eat, drink or smoke when using this product. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

7.2 Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Do not store near combustible materials. Store away from incompatible materials (see section 10 of the SDS). Recommended storage temperature: less than 40°C.

7.3 Specific end use(s)

Soil and Groundwater Remediation

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values

Substance	Sodium persulfate (measured as [S2O8])			
CAS No.	7775-27-1			
Country	Limit Value – Eight hours		Limit Value – Short term	
	ppm	mg/m ³	ppm	mg/m ³
Belgium	-	0.1	-	-

Denmark	-	2.0	-	4.0
Ireland	-	0.1	-	-
Spain	-	0.1	-	-
United Kingdom	-	[1]	-	-
Remarks				
United Kingdom	The UK Advisory Committee on Toxic Substances has expressed concern that, for the OELs shown in parentheses, health may not be adequately protected because of doubts that the limit was not soundly-based. These OELs were included in the published UK 2002 list and its 2003 supplement, but are omitted from the published 2005 list.			

Silicic acid, sodium salt No exposure limits noted

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs):

Sodium persulfate

Exposure Route	Exposure Patterns	DNEL (workers)
Inhalation	Long term systemic	2.06 mg/m ³
	Short term systemic	590 mg/m ³
	Long term local	2.06 mg/m ³
	Short term local	As no short term local toxicity hazard has been identified, there is no requirement to derive a DNEL
Dermal	Long term systemic	18.2 mg/kg bw/day
	Short term systemic	400 mg/kg bw/day
	Long term local	0.102 mg/cm ²
	Short term local	2.248 mg/cm ²

Exposure Route	Exposure Patterns	DNEL (general population)
Inhalation	Long term systemic	1.03 mg/m ³
	Short term systemic	295 mg/m ³
	Long term local	1.03 mg/m ³
	Short term local	295 mg/m ³
Dermal	Long term systemic	9.1 mg/kg bw/day
	Short term systemic	200 mg/kg bw/day
	Long term local	0.051 mg/cm ²
	Short term local	1.124 mg/cm ²
Oral	Long term systemic	9.1 mg/kg bw/day
	Short term systemic	30 mg/kg bw/day

Silicic acid, sodium salt

Exposure Route	Exposure Patterns	DNEL (workers)
Inhalation	Long term systemic	5.61 mg/m ³
	Short term systemic	As no short term systemic toxicity hazard has been identified, there is no requirement to derive short term systemic DNEL
	Long term local	As no local toxicity hazard has been identified, there is no requirement to derive local DNELs
	Short term local	
Dermal	Long term systemic	1.59 mg/kg bw/day
	Short term systemic	As no short term systemic toxicity hazard has been identified, there is no requirement to derive short term systemic DNEL

	Long term local	As no local toxicity hazard has been identified, there is no requirement to derive local DNELs
	Short term local	
	Short term local	

Exposure Route	Exposure Patterns	DNEL (general population)
Inhalation	Long term systemic	1.03 mg/m ³
	Short term systemic	295 mg/m ³
	Long term local	1.03 mg/m ³
	Short term local	295 mg/m ³
Dermal	Long term systemic	9.1 mg/kg bw/day
	Short term systemic	200 mg/kg bw/day
	Long term local	0.051 mg/cm ³
	Short term local	1.124 mg/cm ³
Oral	Long term systemic	9.1 mg/kg bw/day
	Short term systemic	30 mg/kg bw/day

Predicted no effect concentrations (PNECs):

Sodium persulfate

PNEC	Value
Aqua (freshwater)	0.076 mg/L
Aqua (marine water)	0.011 mg/L
STP	3.6 mg/L
Sediment (freshwater)	0.275 mg/kg sediment dw
Sediment (marine water)	0.04 mg/kg sediment dw
Soil	0.015 mg/kg soil dw
Secondary poisoning	No potential for bioaccumulation

Silicic acid, sodium salt

PNEC	Value
Aqua (freshwater)	7.5 mg/L
Aqua (marine water)	1 mg/L
STP	348 mg/L
Sediment (freshwater)	No hazard identified
Sediment (marine water)	No hazard identified
Soil	No hazard identified
Secondary poisoning	No potential for bioaccumulation

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL (occupational exposure limit), suitable respiratory protection must be worn. Eye wash facilities and emergency shower must be available when handling this product.

8.2.2 Individual protection measures, such as personal protective equipment

General information	Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
Eye/face protection	Use dust-tight, unvented chemical safety goggles when there is potential for eye contact. Face shield is recommended.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be

Other
Respiratory protection

recommended by the glove supplier. Frequent change is advisable. Rubber, neoprene or PVC gloves are recommended
Wear appropriate chemical resistant clothing.

Thermal
Hygiene measures

If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn.
Respirator type: approved respirator with P100 filters.
Wear appropriate thermal protective clothing, when necessary.
Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace

8.2.3 Environmental exposure controls

Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Solid
Form	Free-flowing powder
Colour	White

Odour

Odourless

Odour threshold

No data available

pH

11.5 (10% suspension/water) (10% solution, 25 °C)

Melting point/freezing point

No data available

Initial boiling point and boiling range

No data available

Flash point

No data available

Evaporation rate

No data available

Flammability (solid, gas)

May intensify fire; oxidiser

Upper/lower flammability or explosive limits

No data available

Vapour pressure

No data available

Vapour density

No data available

Relative density

1.5 – 1.8 (20 °C)

Solubility(ies)

No data available

Partition coefficient: n-octanol/water

No data available

Auto-ignition temperature

No data available

Decomposition temperature

Decomposition will occur upon heating

Viscosity

No data available

Explosive properties

No data available

Oxidising properties

May intensify fire; oxidiser

SECTION 10: Stability and reactivity

10.1 Reactivity

Keep away from combustible material. Greatly increases the burning rate of combustible materials.

10.2 Chemical stability

Decomposes on heating.

10.3 Possibility of hazardous reactions

Oxidising, avoid contact with reducing agents.

10.4 Conditions to avoid

Heat. Contact with incompatible materials. Avoid dust formation.

10.5 Incompatible materials	Acids. Bases. Combustible material. Reducing Agents. Metals. Organic compounds.
10.6 Hazardous decomposition products	Oxygen. Sulphur oxides.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

PersulfOx®

No data available on product itself. Classification determined based on toxicological data available on constituent substances.

Sodium persulfate

<u>Acute toxicity</u>	<u>Species</u>	<u>Test Results</u>	<u>Method</u>
Oral LD50	Rat	895 mg/kg bw	equivalent/similar to OECD 401
Inhalation LC50	Rat	5,100 mg/m3	OECD 403
Dermal LD50	Rabbit	10,000 mg/kg bw	no guideline followed
Skin corrosion/irritation	Rabbit; Causes skin irritation; OECD 404 (based on read-across category approach)		
Serious eye damage/irritation	Rabbit; Causes serious eye irritation; OECD 405 (based on read-across category approach)		
Respiratory or skin sensitisation	Guinea pig; Causes skin sensitisation; OECD 406 (based on read-across category approach) Epidemiological studies; Causes respiratory tract sensitisation		
Germ cell mutagenicity	Not considered to be mutagenic (FIFRA Guideline 84-1 (Ames study); EPA OPP 84-2)		
Carcinogenicity	Not considered to be carcinogenic; OECD 451 (based on read-across category approach)		
Reproductive toxicity	Rat; NOAEL 250 mg/kg bw/day; OECD 421 (based on read-across category approach)		
STOT-single exposure	May cause respiratory irritation; evidence from occupational exposure + OECD 403 (rat); equivalent/similar to OECD 408 (rat)		
STOT-repeated exposure	Not considered to cause specific target organ toxicity via repeated exposure		
Aspiration hazard	Not considered to cause an aspiration hazard		

Silicic acid, sodium salt

<u>Acute toxicity</u>	<u>Species</u>	<u>Test Results</u>	<u>Method</u>
Oral LD50	Rat	LD50 3,400 mg/kg bw and LD50 5,150 mg/kg bw	equivalent/similar to OECD 401
Inhalation LC50	Rat	LC50 > 2.06 mg/L air	EPA OPPTS 870.1300
Dermal LD50	Rat	LD50 > 5,000 mg/kg bw	EPA OPPTS 870.1200
Skin corrosion/irritation	Rabbit	Irritating to skin	OECD 404
Serious eye damage/irritation	Rabbit	Causes serious eye damage	No guideline followed; published data (based on a weight of evidence approach)
Respiratory or skin sensitisation	Mouse	Not sensitising	OECD 429
Germ cell mutagenicity	Not considered to be mutagenic (OECD 471, OECD 473, OECD 476)		
Carcinogenicity	Not considered to be carcinogenic. No reliable data available.		
Reproductive toxicity	Rat	NOAEL > 159 mg/kg bw/day (nominal)	No guideline followed
STOT-single exposure	Rat	May cause respiratory irritation	EPA OPPTS 870.1300
STOT-repeated exposure	Rat	Not considered to cause	equivalent/similar to OECD

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Aspiration hazard Not considered to cause an aspiration hazard

SECTION 12: Ecological information

12.1 Toxicity

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The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. No data available on product itself. Classification determined based on ecotoxicological data available on constituent substances.

Sodium persulfate

Ecotoxicological endpoint	Value	Species, Method
Acute (short term toxicity): Fish		
Freshwater	LC50 (96h) 76.3 mg/L	Oncorhynchus mykiss, FIFRA guideline 72-1
Marine water	LC50 (96h) 107.6 mg/L	Scophthalmus maximus, OECD 203
Crustacea		
Freshwater	EC50 (48h) 120 mg/L	Daphnia magna, FIFRA guideline 72-2
Marine water	EC50 (5d) 11 mg/L	Abra alba, PARCOM ring test
Algae/aquatic plants	EC50 (72h) 320 mg/L NOEC (72h) 32 mg/L	Phaeodactylum tricornutum, OECD 203
Activated sludge respiration	EC10 (18h) 36 mg/L	Pseudomonas putida, NEN 6509; NPR 6508
Chronic (long-term toxicity): Fish	No data available	
Crustacea	No data available	

Silicic acid, sodium salt

Ecotoxicological endpoint	Value	Species, Method
Acute (short term toxicity): Fish	LC50 (96h) 260 – 310 mg/L	Oncorhynchus mykiss; no guideline followed
Crustacea	LC50 (96h) 1,108 mg/L EC50 (48h) 1,700 mg/L	Danio rerio; OECD 203 Daphnia magna; EU Method C.2
Algae/aquatic plants	EC50 (72h, biomass) 207 mg/L EC50 (72h, growth rate) > 345.4 mg/L	Desmodesmus subspicatus; DIN 38412, Teil 9 (Algal growth inhibition test), German National Guideline; equivalent/similar to OECD 201
Activated sludge respiration	EC0 (18h) >3,480 mg/L	growth inhibition test; Umweltbundesamt, Berlin: Bewertung wassergefährdender Stoffe. Erarbeitet von der ad-hoc-Arbeitsgruppe 1 "Bewertung wassergefährdender Stoffe"
Chronic (long-term toxicity): Fish	No reliable data available	
Crustacea	No reliable data available	

12.2 Persistence and biodegradability

No data is available on the degradability of this product.

No data is available on sodium persulfate however a read across approach was applied with diammonium persulfate. Upon contact with water or water vapour substances of the Persulfate Category hydrolyse into cation and persulfate anion. Hydrolysis is temperature and pH dependent and decomposition rates increase with decreasing pH value and increasing temperature. The persulfate anion, independent of the cation, undergoes further decomposition in normal water or acid conditions, readily oxidizing

water to oxygen, producing sulphate and hydrogen ions. All persulfate decomposition products are ubiquitous to the environment. Hydrolysis is metal catalyzed, and rapid reaction with organic matter also are possible.

No reliable data is available on silicic acid, sodium salt but as an inorganic substance and in view of the chemical structure, soluble silicates are not amendable to biodegradation.

12.3 Bioaccumulative potential

No data is available on the bioaccumulative potential of this product.

Sodium persulfate is determined to have low potential for bioaccumulation.

Silicic acid, sodium salt is also determined to have a low potential for bioaccumulation.

12.4 Mobility in soil

No data available of the mobility of this product.

12.5 Results of PBT and vPvB assessment

The constituent substances, and therefore the mixture, are not considered to be PBT or vPvB.

12.6 Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN Number	UN1479	UN1479	UN1479	UN1479
14.2 UN proper shipping name	OXIDISING SOLID, N.O.S. (SODIUM PERSULFATE MIXTURE)	OXIDISING SOLID, N.O.S. (SODIUM PERSULFATE MIXTURE)	OXIDISING SOLID, N.O.S. (SODIUM PERSULFATE MIXTURE)	OXIDISING SOLID, N.O.S. (SODIUM PERSULFATE MIXTURE)
14.3 Transport hazard class(es)				
Class	5.1	5.1	5.1	5.1
Subsidiary risk	-	-	-	-
Label(s)	5.1	5.1	-	-
Hazard No.	50	-	-	-

Tunnel restriction code	E	-	-	-
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	No	No	Marine pollutant: no	No
Additional information	-	-	EmS: F-A, S-Q	

14.6 Special precautions for user

Read safety instructions, SDS and emergency procedures before handling.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code

No information available

SECTION 15: Regulatory information

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

None identified

15.2 Chemical safety assessment

A chemical safety assessment has been performed for each of the constituents of this mixture.

SECTION 16: Regulatory information

This SDS supersedes the SDS dated 22 January 2018

The following amendments have been made:

- SDS has been fully revised in accordance with Regulation (EU) No 453/2010 and Regulation (EC) No. 1272/2008 (EU CLP) and in accordance with new information on the constituent substances registered under Regulation (EC) 1907/2006 (EU REACH)

List of abbreviations:

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.

ADR: European Agreement Concerning the International Carriage of Dangerous Goods by Road.

CAS: Chemical Abstract Service.

CEN: European Committee for Standardization (Comité Européen de Normalisation).

DNEL: Derived No-Effect Level. ECHA: European Chemical Agency.

IATA: International Air Transport Association. IBC: Intermediate Bulk Container. IMDG: International Maritime Dangerous Goods

MARPOL: International Convention for the Prevention of Pollution from Ships. PBT: Persistent, bioaccumulative, toxic.

PNEC: Predicted No-Effect Concentration.

RID: Regulations concerning the International Carriage of Dangerous Goods by Rail. vPvB: very Persistent, very Bioaccumulative.

References:

ECHA registered substances database, accessed June 2018

<https://echa.europa.eu/registration-dossier/-/registered-dossier/14767/1>

<https://echa.europa.eu/registration-dossier/-/registered-dossier/16162/1>

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any H-statements not written out in full under Sections 2 to 15:

H272 May intensify fire; oxidiser.

H290 May be corrosive to metals.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

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H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

Training information

Follow training instructions when handling this material.

Disclaimer:

Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

ANNEX

EXPOSURE SCENARIOS

Exposure scenarios prepared by the lead registrant for sodium persulfate are provided in the tables immediately below as the main constituent of this mixture. The risk management measures presented are considered sufficient to address the risk of both components of the mixture.

1.1 Scenario 7: Wide dispersive outdoor use of reactive substances, open systems (Professional)

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

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.

The following scenarios contribute to the scenario *Wide dispersive outdoor use of reactive substances, open systems (Professional)*.

The corresponding release to the environment, exposure of workers and consumers resulting from these contributing scenarios is summarized in chapter 10.7 ff.

Table 1 Description of ES 7

Free short title	Wide dispersive outdoor use of reactive substances, open systems (Professional) (7)
Systematic title based on use descriptor	ERC 8E; PROC 8A, 8B, 9, 10, 11, 13, 14, 15, 19, 23B
Name of contributing environmental scenario and corresponding ERC	ERC 8e Wide dispersive outdoor use of reactive substances in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	<p>PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities</p> <p>PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities</p> <p>PROC 9 - Transfer of chemicals into small containers (dedicated filling line)</p> <p>PROC 10 - Roller application or brushing</p> <p>PROC 11 - Non industrial spraying</p> <p>PROC 13 - Treatment of articles by dipping and pouring</p> <p>PROC 14 - Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15 - Use of laboratory reagents in small scale laboratories</p> <p>PROC 19 - Hand-mixing with intimate contact (only PPE available)</p> <p>PROC 23b - Open processing and transfer of minerals at elevated temperature - pt ≈ mp - Med Fugacity</p> <p>PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities</p>

	<p>PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities</p> <p>PROC 9 - Transfer of chemicals into small containers (dedicated filling line)</p> <p>PROC 10 - Roller application or brushing</p> <p>PROC 11 - Non industrial spraying</p> <p>PROC 13 - Treatment of articles by dipping and pouring</p> <p>PROC 14 - Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15 - Use of laboratory reagents in small scale laboratories</p> <p>PROC 19 - Hand-mixing with intimate contact (only PPE available)</p>
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1.1 Contributing Scenario (1) controlling environmental exposure for ERC 8E

Operational conditions	
Annual tonnage	4.00E4 to/year
Daily amount used at site	21.918 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.100 %
Release fraction to wastewater from process	2 %
Release fraction to soil from process	1 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	no
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000000 L/day

1.2 Contributing Scenario (2) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no

Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8B

Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.4 Contributing Scenario (4) controlling professional worker exposure for PROC 9

Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	

Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.5 Contributing Scenario (5) controlling professional worker exposure for PROC 10

Name of contributing scenario	10 - Roller application or brushing
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	

General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.6 Contributing Scenario (6) controlling professional worker exposure for PROC 11

Name of contributing scenario	11 - Non industrial spraying
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	25 %, concentration has been considered linearly <i>(justification: Limit the substance in product to (%): 25)</i>
Max. conc. (ECETOC)	1-5%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.7 Contributing Scenario (7) controlling professional worker exposure for PROC 13

Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	480 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.8 Contributing Scenario (8) controlling professional worker exposure for PROC 14

Name of contributing scenario	14 - Production of preparations or articles by tableting, compression, extrusion, pelletisation
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	

Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.9 Contributing Scenario (9) controlling professional worker exposure for PROC 15

Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	

General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.10 Contributing Scenario (10) controlling professional worker exposure for PROC 19

Name of contributing scenario	19 - Hand-mixing with intimate contact (only PPE available)
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	25 %, concentration has been considered linearly <i>(justification: Limit the substance in product to (%): 25)</i>
Max. conc. (ECETOC)	1-5%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,980 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.11 Contributing Scenario (11) controlling professional worker exposure for PROC 23B

Name of contributing scenario	23b - Open processing and transfer of minerals at elevated temperature - pt ≈ mp - Med Fugacity
Scenario subtitle	solid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	solid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	medium
Frequency and duration of use	
Duration of activity	>4 hours (default)

Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,980 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)

1.12 Contributing Scenario (12) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.

Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)

1.13 Contributing Scenario (13) controlling professional worker exposure for PROC 8B

Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Scenario subtitle	liquid

Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)

Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)

1.14 Contributing Scenario (14) controlling professional worker exposure for PROC 9

Name of contributing scenario	9 - Transfer of chemicals into small containers (dedicated filling line)
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm ²

Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)

1.15 Contributing Scenario (15) controlling professional worker exposure for PROC 10

Name of contributing scenario	10 - Roller application or brushing
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	liquid

Concentration in substance	25 %, concentration has been considered linearly (<i>justification: Limit the substance in product to (%): 25</i>)
Max. conc. (ECETOC)	1-5%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	90 min/day, duration of activity has been considered linearly (<i>justification: Do not carry out activity for more than 180 min/day.</i>)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)

1.16 Contributing Scenario (16) controlling professional worker exposure for PROC 11

Name of contributing scenario	11 - Non industrial spraying
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic

Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly <i>(justification: Limit the substance in product to (%): 5)</i>
Max. conc. (ECETOC)	1-5%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	90 min/day, duration of activity has been considered linearly <i>(justification: Do not carry out activity for more than 90 min/day.)</i>
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) <i>(justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.)</i>

Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)
Use of external/measured value inhalation	Stoffenmanager v.6 (for further details refer to Annex 3)

1.17 Contributing Scenario (17) controlling professional worker exposure for PROC 13

Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	

Exposed skin surface	480 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)

1.18 Contributing Scenario (18) controlling professional worker exposure for PROC 14

Name of contributing scenario	14 - Production of preparations or articles by tableting, compression, extrusion, pelletisation
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	

Physical state	liquid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)

1.19 Contributing Scenario (19) controlling professional worker exposure for PROC 15

Name of contributing scenario	15 - Use of laboratory reagents in small scale laboratories
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic

Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)

Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)

1.20 Contributing Scenario (20) controlling professional worker exposure for PROC 19

Name of contributing scenario	19 - Hand-mixing with intimate contact (only PPE available)
Scenario subtitle	liquid
Exposure type	Inhalation: Long-term systemic Dermal: Long-term systemic
Qualitative Risk Assessment	
General	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Assumes a good basic standard of occupational hygiene is implemented Carefully handle the substance to minimise releases. Wear suitable coveralls to prevent exposure to the skin. Wear rubber boots. Wash off any skin contamination immediately. When not in use, keep containers tightly closed.
Eyes	Use eye protection according to EN 166.
Product characteristics	
Physical state	liquid
Concentration in substance	25 %, concentration has been considered linearly (<i>justification: Limit the substance in product to (%): 25</i>)
Max. conc. (ECETOC)	1-5%
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	60 min/day, duration of activity has been considered linearly (<i>justification: Do not carry out activity for more than 180 min/day.</i>)
Frequency of use	5 days / week
Human factors not influenced by risk management	

Exposed skin surface	1,980 cm ²
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	80 %, burst-time: >4 hours (default) (<i>justification: Wear chemically resistant gloves according to Standard EN 374 with a breakthrough time > 480 min.</i>)
Respiratory protection	90 % (<i>justification: In order to avoid breathing of dust, vapours or spray, wear suitable respiratory protection (conforming to EN143) with breathing filters (half mask P2 APF 10 or P3 APF 20) providing a minimum efficiency of (%): 90.</i>)
Use of external/measured value dermal	RISKOFDERM v2.1 (for further details refer to Annex 2)