

SODIUM BISULFATE

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

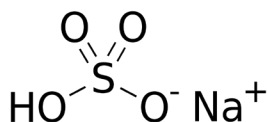
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: SODIUM BISULFATE
Chemical name	: sodium hydrogensulphate
IUPAC name	: sodium hydrogen sulfate
EC Index-No.	: 016-046-00-X
EC-No.	: 231-665-7
CAS-No.	: 7681-38-1
REACH registration No	: 01-2119552465-36-0006
Type of product	: Inorganic
Formula	: NaHSO ₄
Chemical structure	:



Other means of identification : Sodium Bisulfate, Sodium Bisulphate, Sodium Hydrogen Sulfate

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

1.2.1. Relevant identified uses

Main use category	: Industrial use
Use of the substance/mixture	: pH adjustment, cleaning compounds, metal cleaning, food preservatives and chemical industry

1.2.2. Uses advised against

No additional information available

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Serious eye damage/eye irritation, Category 1 H318

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Causes serious eye damage.

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2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS05

Signal word (CLP) :

Danger

Hazard statements (CLP) :

H318 - Causes serious eye damage.

Precautionary statements (CLP) :

P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type :

Mono-constituent

Name	Product identifier	Conc. (% w/w)	Classification according to Regulation (EC) No. 1272/2008 [CLP]
SODIUM BISULFATE	CAS-No.: 7681-38-1 EC-No.: 231-665-7 EC Index-No.: 016-046-00-X REACH-no: 01-2119552465-36-0006	≤ 100	Eye Dam. 1, H318

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general :

In all cases of doubt, or when symptoms persist, seek medical attention. If possible, show the doctor this safety data sheet. Failing this, show the doctor the packaging or label.

First-aid measures after inhalation :

Remove person to fresh air and keep comfortable for breathing. If breathing stops, give artificial respiration. If experiencing respiratory symptoms: Call a poison center or a doctor.

First-aid measures after skin contact :

If skin irritation or rash occurs: Get medical advice/attention. Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.

First-aid measures after eye contact :

Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

First-aid measures after ingestion :

Never give anything by mouth to an unconscious person. Do not induce vomiting. Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after inhalation :

Dust of the product, if present, may cause respiratory irritation after an excessive inhalation exposure.

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Symptoms/effects after skin contact	: Not expected to present a significant skin hazard under anticipated conditions of normal use.
Symptoms/effects after eye contact	: Serious damage to eyes.
Symptoms/effects after ingestion	: Gastrointestinal complaints.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: The product is not flammable.
Explosion hazard	: Not explosive.
Hazardous decomposition products in case of fire	: Toxic fumes may be released. Sulphur oxides.

5.3. Advice for firefighters

Precautionary measures fire	: Keep away from combustible materials. Keep container closed when not in use. Approach from upwind.
Firefighting instructions	: Exercise caution when fighting any chemical fire. Keep upwind. Do not enter fire area without proper protective equipment, including respiratory protection. Eliminate all ignition sources if safe to do so. Contain the extinguishing fluids by bunding.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
Other information	: Do not allow run-off from fire fighting to enter drains or water courses. Notify authorities if product enters sewers or public waters. High temperature decomposition products are harmful by inhalation. Inhalation of vapour can cause breathing difficulties.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Keep public away from danger area.
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6.1.1. For non-emergency personnel

Protective equipment	: Protective goggles. Dust formation: dust mask.
Emergency procedures	: Ventilate spillage area. Avoid contact with skin and eyes.
Measures in case of dust release	: In case of dust production: protective goggles. Dust mask.

6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Evacuate unnecessary personnel. Equip cleanup crew with proper protection. Stop leak if safe to do so. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	: Mechanically recover the product. Sweep or shovel spills into appropriate container for disposal. Wash contaminated area with large amounts of water. Notify authorities if product enters sewers or public waters.
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Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8. Concerning disposal elimination after cleaning, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Comply with the legal requirements. Ensure good ventilation of the work station. Minimise generation of dust. Do not breathe dust. Do not handle until all safety precautions have been read and understood. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store locked up. Keep only in the original container in a cool well ventilated place.

Incompatible products : Strong bases. Strong oxidizing agents.

Incompatible materials : Extremely high or low temperatures.

Heat and ignition sources : Keep away from heat and direct sunlight. Keep away from sources of ignition.

Information on mixed storage : Keep away from food, drink and animal feeding stuffs.

Storage area : Store, if possible, in a cool, well ventilated place away from incompatible materials.

7.3. Specific end use(s)

See Section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

No additional information available

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station. Avoid all unnecessary exposure. Avoid contact with skin, eyes and clothing. Comply with the safety instructions. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure that there is a suitable ventilation system. Handle in accordance with good industrial hygiene and safety procedures. Measure concentrations regularly, and at the time of any change occurring in conditions likely to have consequences on workers exposure. Ensure exposure is below occupational exposure limits (where available). Provide adequate general and local exhaust ventilation.

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8.2.2. Personal protection equipment

Personal protective equipment:

Gloves. Safety glasses. Protective clothing. Dust formation: dust mask.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Safety glasses. EN 166

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Skin and body protection	
Type	Standard
Protective clothing	EN 14605, EN 13034

Hand protection:

Protective gloves. Gloves must be replaced after each use and whenever signs of wear or perforation appear. Please follow the instructions related to the permeability and the penetration time provided by the manufacturer. The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed

Hand protection					
Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Chemical resistant gloves (according to European standard EN 374 or equivalent)	Nitrile rubber (NBR)	6 (> 480 minutes)	0.6	-	EN ISO 374

8.2.2.3. Respiratory protection

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Dust formation: dust mask. EN 143

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Colour	: Light yellow.
Appearance	: Crystalline powder
Odour	: Odourless.
Odour threshold	: Not available

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Melting point	: ≈ 315 °C
Freezing point	: Not applicable
Boiling point	: Not available
Flammability	: Non flammable.
Explosive limits	: Not applicable
Lower explosion limit	: Not applicable
Upper explosion limit	: Not applicable
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: > 315 °C
pH	: 1 (aqueous solution, 20 °C)
pH solution	: Not available
Viscosity, kinematic	: Not applicable
Solubility	: Soluble in water. Water: 285 g/l at 25 °C
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Vapour pressure at 50°C	: Not available
Density	: 2.43 g/cm ³ (20 °C)
Relative density	: Not available
Relative vapour density at 20°C	: Not applicable
Particle size	: 35.06 µm (MMAD)
Particle size distribution	: Not available
Particle shape	: Not available
Particle aspect ratio	: Not available
Particle aggregation state	: Not available
Particle agglomeration state	: Not available
Particle specific surface area	: Not available
Particle dustiness	: 8160 mg/kg

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7). Water, humidity.

10.5. Incompatible materials

Strong bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

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

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SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	: Not classified (Based on available data, the classification criteria are not met)
Skin corrosion/irritation	: Not irritating. (OECD 404 method) (Based on available data, the classification criteria are not met)
Serious eye damage/irritation	: Causes serious eye damage. (OECD 405 method)
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure	: Not classified (Based on available data, the classification criteria are not met)
Aspiration hazard	: Not classified (Not relevant)

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Viscosity, kinematic	Not applicable
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11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Hazardous to the aquatic environment, short-term (acute)	: Not classified (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic)	: Not classified (Based on available data, the classification criteria are not met)
Not rapidly degradable	

12.2. Persistence and degradability

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Persistence and degradability	Not applicable for inorganic products.
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12.3. Bioaccumulative potential

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Bioaccumulative potential	Not applicable for inorganic products.
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12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Endocrine disrupting properties

No additional information available

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12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Completely empty the packaging prior to decontamination. Recycle the material as far as possible. Comply with local regulations for disposal.
Additional information	: Recover as much product as possible. Recycle or dispose of in compliance with current legislation.
Ecology - waste materials	: Avoid release to the environment.
HP Code	: HP4 - "Irritant – skin irritation and eye damage:" waste which on application can cause skin irritation or damage to the eye.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available				

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

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14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Not listed on REACH Annex XVII

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

Germany

Employment restrictions

: Observe restrictions according Act on the Protection of Working Mothers (MuSchG).
Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG).

Water hazard class (WGK)

: WGK 1, Slightly hazardous to water (Classification according to AwSV; ID No. 376).

Storage class (LGK, TRGS 510)

: LGK 13 - Non-combustible solids.

Joint storage table

LGK 1	LGK 2A	LGK 2B	LGK 3	LGK 4.1A
LGK 4.1B	LGK 4.2	LGK 4.3	LGK 5.1A	LGK 5.1B
LGK 5.1C	LGK 5.2	LGK 6.1A	LGK 6.1B	LGK 6.1C
LGK 6.1D	LGK 6.2	LGK 7	LGK 8A	LGK 8B
LGK 10	LGK 11	LGK 12	LGK 13	LGK 10-13

Joint storage not permitted for

: LGK 1, LGK 6.2, LGK 7.

Joint storage with restrictions permitted for

: LGK 4.1A, LGK 5.1C.

Joint storage permitted for

: LGK 2A, LGK 2B, LGK 3, LGK 4.1B, LGK 4.2, LGK 4.3, LGK 5.1A, LGK 5.1B, LGK 5.2, LGK 6.1A, LGK 6.1B, LGK 6.1C, LGK 6.1D, LGK 8A, LGK 8B, LGK 10, LGK 11, LGK 12, LGK 13, LGK 10-13.

Hazardous Incident Ordinance (12. BImSchV)

: Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Denmark

Danish National Regulations

: Young people below the age of 18 years are not allowed to use the product

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15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

General revision.

Abbreviations and acronyms:

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
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit

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Abbreviations and acronyms:

VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

Data sources : Classification according to Regulation (EC) No. 1272/2008 [CLP]. ECHA (European Chemicals Agency). Supplier's safety documents.

Full text of H- and EUH-statements:

Eye Dam. 1	Serious eye damage/eye irritation, Category 1
H318	Causes serious eye damage.

The classification complies with : ATP 12

Safety Data Sheet (SDS), EU

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable

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Annex to the safety data sheet

#	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	3	2a, 2b, 4, 5, 6b, 7, 8, 9, 10, 11, 13, 15, 16, 17, 19, 20, 23	14, 15, 19, 20, 21, 25, 35, 36, 37	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 17, 19, 21, 24	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b	NA	ES6181
2	Use in Cleaning Agents	21	NA	35	NA	8a	NA	ES6185
3	Use as pH-regulator	21	NA	20, 37	NA	8a	NA	ES8889
4	Industrial use	3	2a, 2b, 4, 5, 6b, 7, 8, 9, 10, 11, 13, 15, 16, 17, 19, 20, 23	14, 15, 19, 20, 21, 25, 35, 36, 37	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 17, 19, 21, 24	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b	NA	ES8877
5	Professional use	22	NA	14, 15, 20, 35, 37	2, 3, 4, 5, 8a, 8b, 9, 10, 11, 12, 13, 14, 15, 17, 19, 21, 24	8a, 8b, 8c, 8d, 8e, 8f, 9a, 9b, 10a, 10b, 11a, 11b	NA	ES6183

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1. Short title of Exposure Scenario 1: Manufacture of substance	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU2a: Mining, (without offshore industries) SU2b: Offshore industries SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU7: Printing and reproduction of recorded media SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU11: Manufacture of rubber products SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU19: Building and construction work SU20: Health services SU23: Recycling
Chemical product category	PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC19: Intermediate PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC21: Laboratory chemicals PC25: Metal working fluids PC35: Washing and cleaning products (including solvent based products) PC36: Water softeners PC37: Water treatment chemicals
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC12: Use of blowing agents in manufacture of foam PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC17: Lubrication at high energy conditions and in partly open process PROC19: Hand-mixing with intimate contact and only PPE available PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations ERC3: Formulation in materials

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	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC6c: Industrial use of monomers for manufacture of thermoplastics ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ERC7: Industrial use of substances in closed systems ERC12a: Industrial processing of articles with abrasive techniques (low release) ERC12b: Industrial processing of articles with abrasive techniques (high release)
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC12a, ERC12b

Amount used	The amount of substance used is not considered relevant for these operations.	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000 m ³ /d
Other given operational conditions affecting environmental exposure	Continuous use/release	
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes.,Regular control of the pH value during introduction into open waters is required.,In general discharges should be carried out such that pH changes in receiving surface waters are minimised.,In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms.,Neutralization is normally necessary before waste water is discharged into water treatment plants.
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2,000 m ³ /d
Conditions and measures related to external treatment of waste for disposal	Disposal methods	Waste should be reused or discharged to the industrial wastewater and further neutralized if needed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC17, PROC19, PROC21, PROC24

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100% (unless stated differently)
	Physical Form (at time of use)	Powdered substance, granules
Amount used	The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario	
Human factors not influenced by risk management	Breathing volume	10 m ³
Other operational conditions affecting workers exposure	Closed system (PROC1, PROC2, PROC3, PROC7)	
Technical conditions and measures to control dispersion from source towards the worker	Provide local exhaust ventilation (LEV). (Efficiency: 78 %) Ensure that the worker is in a separated (control) room with independent air supply Ensure that a spraying booth is used (PROC7)	

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Conditions and measures related to personal protection, hygiene and health evaluation	If no adequate ventilation is available: Wear respiratory protection FFP2 mask Filtering Half-face mask (DIN EN 149) Respirator with a particle filter (EN 143) Protective gloves complying with EN 374. Wear protective clothing. Wear protective shoes. Safety goggles
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3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Workers

The MEASE Tool has been used to estimate workplace exposure. Dermal exposure is not considered to be relevant.

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

The DU works inside the boundaries set by the exposure scenario if the substance is either marked as a liquid preparation or in case of a solid preparation is used as manufactured and not further processed to get smaller particles Health 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.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

For further information on the assessment method, see: <http://www.ebrc.de/mease.html>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES.

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1. Short title of Exposure Scenario 2: Use in Cleaning Agents

Main User Groups	SU 21: Consumer uses: Private households (general public, consumers)
Chemical product category	PC35: Washing and cleaning products (including solvent based products)
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Other given operational conditions affecting environmental exposure	Indoor/Outdoor use	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant

2.2 Contributing scenario controlling consumer exposure for: PC35: Acid surface cleaner

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 6%
	Physical Form (at time of use)	Liquid
Amount used	Amount used per event	12 g/l (Typ PC35)
	Amount used per event	22 g/l (Max PC35)
Frequency and duration of use	Exposure duration per day	20 min (Max PC35)
	Frequency of use	7 Times per week (Max PC35)
Human factors not influenced by risk management	Body weight	60 kg
	Exposed skin areas	Two hands 857.5 cm ²
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes. Keep out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water. Wash hands thoroughly after handling. Safety goggles

2.3 Contributing scenario controlling consumer exposure for: PC35: Acid surface cleaner

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 10%
	Physical Form (at time of use)	Solid, low dustiness
Amount used	Amount used per event	8 g/l (Max PC35)
Frequency and duration of use	Exposure duration per day	20 min (Max PC35)
	Frequency of use	7 Times per week (Max PC35)
Human factors not influenced by risk management	Body weight	60 kg
	Exposed skin areas	Two hands 857.5 cm ²
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes. Keep out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water. Wash hands thoroughly after handling.

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		Safety goggles
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2.4 Contributing scenario controlling consumer exposure for: PC35: Toilet cleaner

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 80%
	Physical Form (at time of use)	Solid, low dustiness
Amount used	Amount used per event	20 g (Typ PC35)
	Amount used per event	30 g (Typ PC35)
Frequency and duration of use	Exposure duration per day	< 1 min
	Frequency of use	2 Times per week (Max PC35)
Human factors not influenced by risk management	Body weight	60 kg
	Exposed skin areas	Only splashes
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes. Keep out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water. Wash hands thoroughly after handling. Safety goggles

3. Exposure estimation and reference to its source

Environment

The pH impact due to this use is expected to be negligible. The influent of a municipal wastewater treatment plant is often neutralized anyway. The substance may even be used beneficially for pH control of basic wastewater streams that are treated in biological WWTPs.

Consumers

Qualitative approach used to conclude safe use. Dermal exposure is not considered to be relevant. No significant inhalative exposure.

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

The DU works inside the boundaries set by the exposure scenario if the substance is either marked as a liquid preparation or in case of a solid preparation is used as manufactured and not further processed to get smaller particles.

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1. Short title of Exposure Scenario 3: Use as pH-regulator

Main User Groups	SU 21: Consumer uses: Private households (general public, consumers)
Chemical product category	PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC37: Water treatment chemicals
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b

Other given operational conditions affecting environmental exposure	Indoor/Outdoor use	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant

2.2 Contributing scenario controlling consumer exposure for: PC20, PC37

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100% (unless stated differently)
	Physical Form (at time of use)	Solid, low dustiness, granules
Amount used	Amount used per event	10 g/m ³ (Pouring of granules PC20, PC37)
Frequency and duration of use	Exposure duration per day	1.33 min (Pouring of granules PC20, PC37)
	Frequency of use	1 Times per week (Pouring of granules PC20, PC37)
Human factors not influenced by risk management	Body weight	60 kg (Pouring of granules, adult PC20, PC37)
	Exposed skin areas	Palms of both hands (480 cm ²) 60 kg (Pouring of granules, adult PC20, PC37)
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes. Keep out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water. Wash hands thoroughly after handling. Safety goggles

2.3 Contributing scenario controlling consumer exposure for: PC20, PC37

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
	Physical Form (at time of use)	Liquid
Amount used	Amount used per event	10% (Dropwise application of solution PC20, PC37)
	Post- application ingestion	0.05 l/h
Frequency and duration of use	Exposure duration per day	> 1 min
	Frequency of use	1 tasks/month 365 days/year (Post-application ingestion PC20, PC37)

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Human factors not influenced by risk management	Body weight	22 kg, 60 kg
	Exposed skin areas	Palms of both hands 60 kg (Dropwise application of solution PC20, PC37) Body weight 60 kg (Dropwise application of solution PC20, PC37) Body weight 22 kg (Post-application ingestion, child PC20, PC37) Body weight 60 kg (Post-application ingestion, adult PC20, PC37)
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes. Keep out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water. Wash hands thoroughly after handling. Safety goggles

3. Exposure estimation and reference to its source

Environment

The pH impact due to this use is expected to be negligible. The influent of a municipal wastewater treatment plant is often neutralized anyway. The substance may even be used beneficially for pH control of basic wastewater streams that are treated in biological WWTPs.

Consumers

Qualitative approach used to conclude safe use. Dermal exposure is not considered to be relevant. Inhalative exposure is regarded to be not relevant.

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

The DU works inside the boundaries set by the exposure scenario if the substance is either marked as a liquid preparation or in case of a solid preparation is used as manufactured and not further processed to get smaller particles.

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1. Short title of Exposure Scenario 4: Industrial use	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU2a: Mining, (without offshore industries) SU2b: Offshore industries SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU7: Printing and reproduction of recorded media SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU11: Manufacture of rubber products SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU19: Building and construction work SU20: Health services SU23: Recycling
Chemical product category	PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC19: Intermediate PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC21: Laboratory chemicals PC25: Metal working fluids PC35: Washing and cleaning products (including solvent based products) PC36: Water softeners PC37: Water treatment chemicals
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC12: Use of blowing agents in manufacture of foam PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC17: Lubrication at high energy conditions and in partly open process PROC19: Hand-mixing with intimate contact and only PPE available PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations

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	<p>ERC3: Formulation in materials</p> <p>ERC4: Industrial use of processing aids in processes and products, not becoming part of articles</p> <p>ERC5: Industrial use resulting in inclusion into or onto a matrix</p> <p>ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)</p> <p>ERC6b: Industrial use of reactive processing aids</p> <p>ERC6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers</p> <p>ERC7: Industrial use of substances in closed systems</p> <p>ERC12a: Industrial processing of articles with abrasive techniques (low release)</p> <p>ERC12b: Industrial processing of articles with abrasive techniques (high release)</p>
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC12a, ERC12b

Amount used	The amount of substance used is not considered relevant for these operations.	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000 m3/d
Other given operational conditions affecting environmental exposure	Continuous use/release	
<p>Technical conditions and measures at process level (source) to prevent release</p> <p>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</p> <p>Organizational measures to prevent/limit release from the site</p>	Water	Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes. Regular control of the pH value during introduction into open waters is required. In general discharges should be carried out such that pH changes in receiving surface waters are minimised. In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms. Neutralization is normally necessary before waste water is discharged into water treatment plants.
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2,000 m3/d
Conditions and measures related to external treatment of waste for disposal	Disposal methods	Waste should be reused or discharged to the industrial wastewater and further neutralized if needed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC17, PROC19, PROC21, PROC24

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100% (unless stated differently)
	Physical Form (at time of use)	Powdered substance, granules
Amount used	The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario	
Human factors not influenced by risk management	Breathing volume	10 m ³
Other operational conditions affecting workers exposure	Closed system (PROC1, PROC2, PROC3, PROC7)	
Technical conditions and measures to control dispersion from source towards the worker	Provide local exhaust ventilation (LEV). (Efficiency: 78 %)	

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	Ensure that the worker is in a separated (control) room with independent air supply Ensure that a spraying booth is used (PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	If no adequate ventilation is available: Wear respiratory protection FFP2 mask Filtering Half-face mask (DIN EN 149) Respirator with a particle filter (EN 143) Protective gloves complying with EN 374. Wear protective clothing. Wear protective shoes. Safety goggles

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Workers

The MEASE Tool has been used to estimate workplace exposure. Dermal exposure is not considered to be relevant.

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

The DU works inside the boundaries set by the exposure scenario if the substance is either marked as a liquid preparation or in case of a solid preparation is used as manufactured and not further processed to get smaller particles Health 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.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

For further information on the assessment method, see: <http://www.ebrc.de/mease.html>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES.

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1. Short title of Exposure Scenario 5: Professional use	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Chemical product category	PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC12: Use of blowing agents in manufacture of foam PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC17: Lubrication at high energy conditions and in partly open process PROC19: Hand-mixing with intimate contact and only PPE available PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11a: Wide dispersive indoor use of long-life articles and materials with low release ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a, ERC10b, ERC11a, ERC11b

Amount used	The amount of substance used is not considered relevant for these operations.	
Environment factors not influenced by risk management	Flow rate of receiving surface water	18,000 m3/d
Other given operational conditions affecting environmental exposure	Continuous use/release	

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<p>Technical conditions and measures at process level (source) to prevent release</p> <p>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</p> <p>Organizational measures to prevent/limit release from the site</p>	Water	Any wastewater should be emitted to the STP
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	On-site waste water treatment Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2,000 m3/d

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC17, PROC19, PROC21, PROC24

Product characteristics	Physical Form (at time of use)	Powdered substance, granules
Amount used	The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario	
Other operational conditions affecting workers exposure	Closed system(PROC2, PROC3, PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Do not blow dust off with compressed air Provide local exhaust ventilation (LEV). (Efficiency: 78 %)	
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Complete segregation (PROC11)
	Spraying	Ensure segregation of worker from the source (PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	<p>If no adequate ventilation is available: Wear respiratory protection</p> <p>Wear air purifying mask APF20</p> <p>Filtering Half-face mask (DIN EN 149)</p> <p>FFP2 mask</p> <p>Half mask with a particle filter P2 (EN 143)</p> <p>Protective gloves complying with EN 374.</p> <p>Wear safety goggles.</p> <p>Safety shoes</p> <p>Wear protective clothing.</p>	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Workers

The MEASE Tool has been used to estimate workplace exposure. Dermal exposure is not considered to be relevant.

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

The DU works inside the boundaries set by the exposure scenario if the substance is either marked as a liquid preparation or in case of a solid preparation is used as manufactured and not further processed to get smaller particles Health 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.

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Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

For further information on the assessment method, see: <http://www.ebrc.de/mease.html>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES.