

*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006*

**Hydrogen Peroxide 35 - <50%**

Version 4.0

Print Date 2013/10/31

Revision date / valid from 2013/10/31

MSDS code: MYYY760

**Section 1: Identification of the substance/mixture and of the company/undertaking**

**1.1. Product identifier**

Trade name : Hydrogen Peroxide 35 - <50%  
 Substance name : hydrogen peroxide solution  
 Index-No. : 008-003-00-9  
 CAS-No. : 7722-84-1  
 EC-No. : 231-765-0  
 Registration number : 01-2119485845-22-xxxx

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

Use of the Substance/Mixture : At this time we do not yet have information on identified uses. They will be included in this safety data sheet when available.  
 Uses advised against : At this moment we have not identified any uses advised against

**1.3. Details of the supplier of the safety data sheet**

Company : Brenntag UK & Ireland  
 Albion House, Rawdon Park  
 GB LS19 7XX Leeds Yeadon  
 Telephone : +44 (0) 113 3879 200  
 Telefax : +44 (0) 113 3879 280  
 E-mail address : msds@brenntag.co.uk

**1.4. Emergency telephone number**

Emergency telephone number : Emergency only telephone number (open 24 hours):  
 +44 (0) 1865 407333 (N.C.E.C. Culham)

**Section 2: Hazards identification**

**2.1. Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	Hazard category	Target Organs	Hazard statements
Acute toxicity (Oral)	Category 4	---	H302
Skin irritation	Category 2	---	H315

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Serious eye damage	Category 1	---	H318
Specific target organ toxicity - single exposure	Category 3	---	H335
Acute toxicity (Inhalation)	Category 4	---	H332

For the full text of the H-Statements mentioned in this Section, see Section 16.

### Classification according to EU Directives 67/548/EEC or 1999/45/EC

Directive 67/548/EEC or 1999/45/EC	
Hazard symbol / Category of danger	Risk phrases
Harmful (Xn)Harmful (Xn)	R22
Irritant (Xi)Irritant (Xi)	R41, R37/38


For the full text of the R-phrases mentioned in this Section, see Section 16.

### Most important adverse effects

- Human Health : See section 11 for toxicological information.
- Physical and chemical hazards : See section 9 for physicochemical information.
- Potential environmental effects : See section 12 for environmental information.

## 2.2. Label elements

### Labelling according to Regulation (EC) No 1272/2008

- Hazard symbols : 
- Signal word : Danger
- Hazard statements : H302 Harmful if swallowed.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.  
H332 Harmful if inhaled.  
H335 May cause respiratory irritation.
- Precautionary statements
- Prevention : P261 Avoid breathing vapours/spray.  
P280 Wear protective gloves/ eye protection/ face protection.
- Response : P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.

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P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332 + P313 If skin irritation occurs: Get medical advice/attention.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

### Hazardous components which must be listed on the label:

- hydrogen peroxide solution

### 2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

## Section 3: Composition/information on ingredients

### 3.1. Substances

Chemical nature : Aqueous solution

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)		Classification (67/548/EEC)
		Hazard class / Hazard category	Hazard statements	
<b>hydrogen peroxide solution</b>				
Index-No. : 008-003-00-9	>= 49 - < 50	Ox. Liq.1	H271	R 5
CAS-No. : 7722-84-1		Acute Tox.4	H332	Oxidising; O; R 8
EC-No. : 231-765-0		Acute Tox.4	H302	Corrosive; C; R35
Registration : 01-2119485845-22-xxxx		Skin Corr.1A	H314	Harmful; Xn;
C&L-No. : 02-2119752423-42-0000		STOT SE3	H335	R20/22

For the full text of the R-phrases mentioned in this Section, see Section 16.

For the full text of the H-Statements mentioned in this Section, see Section 16.

## Section 4: First aid measures

### 4.1. Description of first aid measures

General advice : Take off all contaminated clothing immediately.

If inhaled : If unconscious place in recovery position and seek medical advice. Remove to fresh air.

In case of skin contact : Wash off immediately with plenty of water. If skin irritation persists, call a physician.

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- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
- If swallowed : Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician immediately. If a person vomits when lying on his back, place him in the recovery position.

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

- Symptoms : See Section 11 for more detailed information on health effects and symptoms.
- Effects : See Section 11 for more detailed information on health effects and symptoms.

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

- Treatment : No information available.

## Section 5: Firefighting measures

### 5.1. Extinguishing media

- Suitable extinguishing media : Spray generously with water.
- Unsuitable extinguishing media : Do not use other extinguishing media.

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

- Specific hazards during firefighting : The product is not flammable. Oxygen released on exothermic decomposition may support combustion in case of surrounding fire. Heating will cause a pressure rise - with risk of bursting

### 5.3. Advice for firefighters

- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Wear appropriate body protection (full protective suit)
- Further information : Cool closed containers exposed to fire with water spray. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

## Section 6: Accidental release measures

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

- Personal precautions : Use personal protective equipment. Keep away unprotected persons. Avoid contact with skin and eyes. Do not breathe vapours or spray mist. For personal protection see section 8.

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### 6.2. Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

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

Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal. Flush away residuals with plenty of water.

Further information : Treat recovered material as described in the section "Disposal considerations".

### 6.4. Reference to other sections

See Section 1 for emergency contact information.  
See Section 8 for information on personal protective equipment.  
See Section 13 for waste treatment information.

## Section 7: Handling and storage

### 7.1. Precautions for safe handling

Advice on safe handling : Do not keep the container sealed. Provide sufficient air exchange and/or exhaust in work rooms. Avoid formation of aerosol. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.

Hygiene measures : Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist.

### 7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Suitable materials for containers: Stainless steel; glass; Plastic container of HDPE; Unsuitable materials for containers: Brass; Copper; Iron

Advice on protection against fire and explosion : Not combustible. Oxidizing agent, may cause spontaneous ignition of combustible materials. In concentrations between 20 - 40 %: Liquid with minor oxidizing effect. With catalysts or at elevated temperatures hydrogen peroxide decomposes to water and oxygen.

Further information on storage conditions : Store in cool place. Keep in a well-ventilated place. Protect against light. Protect from contamination.

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Advice on common storage : Keep away from food, drink and animal feedingstuffs. Keep away from combustible material. Materials to avoid: Reducing agents

### 7.3. Specific end use(s)

Specific use(s) : No information available.

## Section 8: Exposure controls/personal protection

### 8.1. Control parameters

<b>Component:</b>	<b>hydrogen peroxide solution</b>	<b>CAS-No.</b>
		<b>7722-84-1</b>

#### Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)

DNEL		
Workers, Acute - local effects, Inhalation	:	3 mg/m <sup>3</sup>
DNEL		
Workers, Long-term - local effects, Inhalation	:	1.4 mg/m <sup>3</sup>
DNEL		
Population, Acute - local effects, Inhalation	:	1.93 mg/m <sup>3</sup>
DNEL		
Population, Long-term - local effects, Inhalation	:	0.21 mg/m <sup>3</sup>

#### Predicted No Effect Concentration (PNEC)

Fresh water	:	0.0126 mg/l
Marine water	:	0.0126 mg/l
Intermittent releases	:	0.0138 mg/l
Sediment	:	0.047 mg/kg dwt
Soil	:	0.0019 mg/kg
Sewage treatment plant (STP)	:	4.66 mg/l

<b>Component:</b>	<b>CAS-No.</b>
	<b>7722-84-1</b>

#### Other Occupational Exposure Limit Values

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EH40 WEL, Time Weighted Average (TWA):  
1 ppm, 1.4 mg/m<sup>3</sup>

EH40 WEL, Short Term Exposure Limit (STEL):  
2 ppm, 2.8 mg/m<sup>3</sup>

ELV (IE), Short Term Exposure Limit (STEL):  
2 ppm, 3 mg/m<sup>3</sup>

ELV (IE), Time Weighted Average (TWA):  
1 ppm, 1.5 mg/m<sup>3</sup>

### 8.2. Exposure controls

#### Appropriate engineering controls

Refer to protective measures listed in sections 7 and 8.

#### Personal protective equipment

##### *Respiratory protection*

Advice : Use respirator with appropriate filter if vapours or aerosol are released.  
Combination filter:NO-P3

##### *Hand protection*

Advice : Wear suitable gloves.  
The following materials are suitable:  
Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).  
Protective gloves should be replaced at first signs of wear.

Material : butyl-rubber  
Break through time :  $\geq 8$  h  
Glove thickness : 0.5 mm

Material : natural rubber  
Break through time :  $\geq 8$  h  
Glove thickness : 0.5 mm

Material : polychloroprene  
Break through time :  $\geq 8$  h  
Glove thickness : 0.5 mm

##### *Eye protection*

Advice : Tightly fitting safety goggles

##### *Skin and body protection*

Advice : Wear suitable protective clothing.

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### Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

## Section 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Form	: liquid
Colour	: colourless
Odour	: odourless
Odour Threshold	: no data available
pH	: 2 - 4 (20 °C)
Melting point/range	: ca. -50 °C
Boiling point/boiling range	: ca. 109 °C
Flash point	: not applicable
Evaporation rate	: no data available
Flammability (solid, gas)	: no data available
Upper explosion limit	: no data available
Lower explosion limit	: no data available
Vapour pressure	: no data available
Relative vapour density	: no data available
Density	: ca. 1.2 g/cm <sup>3</sup> (20 °C)
Water solubility	: completely soluble
Partition coefficient: n-octanol/water	: log Kow -1.57 (25 °C) log Pow, calculated on the pure substance
Auto-ignition temperature	: no data available
Thermal decomposition	: no data available
Viscosity, dynamic	: no data available
Explosivity	: Product is not explosive.



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Oxidizing properties : no data available

### 9.2. Other information

No further information available.

## Section 10: Stability and reactivity

### 10.1. Reactivity

Advice : Reacts with copper, aluminum, zinc and their alloys.

### 10.2. Chemical stability

Advice : No decomposition if stored and applied as directed.

### 10.3. Possibility of hazardous reactions

Hazardous reactions : Oxygen released on exothermic decomposition may support combustion in case of surrounding fire.

### 10.4. Conditions to avoid

Conditions to avoid : Keep away from direct sunlight.

### 10.5. Incompatible materials

Materials to avoid : Reducing agents, Metals, alkalis, Organic materials, Impurities, Combustible materials

### 10.6. Hazardous decomposition products

Hazardous decomposition products : Oxygen

## Section 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute toxicity

##### Oral

LD50 : > 225 mg/kg (rat) (OECD Test Guideline 401)

##### Dermal

LD50 : > 2000 mg/kg (rabbit) (OECD Test Guideline 402)

#### Further information

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Other relevant toxicity information : Inhalation of aerosol may cause irritation to the upper respiratory tract.

### Section 12: Ecological information

#### 12.1. Toxicity

Component:	hydrogen peroxide solution	CAS-No. 7722-84-1
<b>Acute toxicity</b>		
<b>Fish</b>		
LC50	:	16.4 mg/l (Pimephales promelas; 96 h)
LC50	:	35 mg/l (Leuciscus idus melanotus; 24 h)
<b>Toxicity to daphnia and other aquatic invertebrates</b>		
EC50	:	7.7 mg/l (Daphnia magna; 24 h)
<b>algae</b>		
EC50	:	27.5 - 43 mg/l (scenedesmus quadricauda; 240 h)
<b>Bacteria</b>		
		11 mg/l (Pseudomonas putida; 16 h)

#### 12.2. Persistence and degradability

<b>Persistence and degradability</b>		
<b>Persistence</b>		
Result	:	The product can be degraded by abiotic (e.g. chemical or photolytic) processes.

#### 12.3. Bioaccumulative potential

#### 12.4. Mobility in soil

<b>Mobility</b>		
Result	:	The product is mobile in water environment.

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### 12.5. Results of PBT and vPvB assessment

#### Results of PBT and vPvB assessment

Result : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent nor very bioaccumulating (vPvB).  
not applicable

### 12.6. Other adverse effects

#### Additional ecological information

Result : Do not flush into surface water or sanitary sewer system.  
Avoid subsoil penetration.

## Section 13: Disposal considerations

### 13.1. Waste treatment methods

Product : Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.

Contaminated packaging : Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product.

European Waste Catalogue Number : No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

## Section 14: Transport information

### 14.1. UN number

2014

### 14.2. UN proper shipping name

ADR : HYDROGEN PEROXIDE, AQUEOUS SOLUTION  
RID : HYDROGEN PEROXIDE, AQUEOUS SOLUTION  
IMDG : HYDROGEN PEROXIDE, AQUEOUS SOLUTION

### 14.3. Transport hazard class(es)

ADR-Class : 5.1

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(Labels; Classification Code; Hazard identification No; Tunnel restriction code)	5.1, 8; OC1; 58; (E)
RID-Class	: 5.1
(Labels; Classification Code; Hazard identification No)	5.1, 8; OC1; 58
IMDG-Class	: 5.1
(Labels; EmS)	5.1, 8; F-H, S-Q

### 14.4. Packaging group

ADR	: II
RID	: II
IMDG	: II

### 14.5. Environmental hazards

Labeling according to 5.2.1.8 ADR	: no
Labeling according to 5.2.1.8 RID	: no
Labeling according to 5.2.1.6.3 IMDG	: no
Classification as environmentally hazardous according to 2.9.3 IMDG	: no
Classified as "P" according to 2.10 IMDG	: no

### 14.6. Special precautions for user

Not applicable.

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

IMDG : Not applicable.

## Section 15: Regulatory information

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

#### hydrogen peroxide solution

EU. Regulation 648/2004, Annex VII, Content Labeling for Detergents  
Threshold Concentration: 0.2 %

EU. Regulation No 1451/2007 [Biocides], Annex I, Active substances identified as existing (OJ (L 325)  
Listed EC Number: 231-765-0

:

#### Notification status

#### hydrogen peroxide solution:

Regulatory List	Notification	Notification number
AICS	YES	

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DSL	YES	
INV (CN)	YES	
ENCS (JP)	YES	(1)-419
ISHL (JP)	YES	(1)-419
PHARM (JP)	YES	
TSCA	YES	
EINECS	YES	231-765-0
KECI (KR)	YES	97-1-2
KECI (KR)	YES	KE-20204
PICCS (PH)	YES	
IECSC	YES	

### 15.2. Chemical Safety Assessment

no data available

## Section 16: Other information

### Full text of R-phrases referred to under sections 2 and 3.

R 5	Heating may cause an explosion.
R 8	Contact with combustible material may cause fire.
R20/22	Harmful by inhalation and if swallowed.
R22	Harmful if swallowed.
R35	Causes severe burns.
R37/38	Irritating to respiratory system and skin.
R41	Risk of serious damage to eyes.

### Full text of H-Statements referred to under sections 2 and 3.

H271	May cause fire or explosion; strong oxidiser.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.

### Further information

Other information : Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use. The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship. The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

|| Indicates updated section.

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No.	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	4, 8, 9, 10, 11, 12, 14, 15, 16, 17	0, 1, 2, 8, 9a, 12, 14, 15, 20, 21, 23, 25, 26, 27, 29, 31, 32, 33, 34, 35, 37, 39	1, 2, 3, 4, 5, 7, 10, 12, 13, 14, 15	1, 2, 4, 6a, 6b, 6c, 6d	NA	ES142
2	Distribution of substance	3	4, 8, 9, 10, 11, 12, 14, 15, 16, 17	0, 1, 8, 12, 14, 15, 21, 25, 27, 29, 31, 32, 33, 34, 35, 37, 39	8a, 8b, 9	1, 2, 4, 6a, 6b, 6c	NA	ES278
3	Use in Cleaning Agents	22	NA	NA	4, 10, 11, 13, 19	8a, 8b, 8d, 8e	NA	ES400
4	Use in Cleaning Agents	21	NA	21, 35	NA	8a, 8b, 8d, 8e	NA	ES377
5	Use in agrochemicals	3	1, 2, 8	NA	1, 2, 3, 4	4, 6b	NA	ES327
6	Use in agrochemicals	22	1, 2, 8	NA	1, 2, 3, 4	8a, 8b, 8e, 8d	NA	ES362
7	Use in agrochemicals	21	1, 2, 8	20, 37	NA	8a, 8b, 8d, 8e	NA	ES366
8	Use as a bleach	3	5, 6b, 6a	NA	1, 2, 3, 4, 13, 19	4, 6b	NA	ES287
9	Use as a bleach	22	5, 6b, 6a	NA	1, 2, 3, 4, 13, 19	8a, 8b, 8e	NA	ES312
10	Use in cosmetics	22	NA	NA	19	8b	NA	ES404
11	Use as a bleach	21	5, 6b, 6a	23, 24, 26, 34	NA	8a, 8b, 8e	NA	ES316
12	Use in cosmetics	21	NA	39	NA	8b	NA	ES408

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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	<p>SU4: Manufacture of food products</p> <p>SU8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>SU9: Manufacture of fine chemicals</p> <p>SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)</p> <p>SU11: Manufacture of rubber products</p> <p>SU12: Manufacture of plastics products, including compounding and conversion</p> <p>SU14: Manufacture of basic metals, including alloys</p> <p>SU15: Manufacture of fabricated metal products, except machinery and equipment</p> <p>SU16: Manufacture of computer, electronic and optical products, electrical equipment</p> <p>SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment</p>
Chemical product category	<p>PC0: Other products:</p> <p>PC1: Adhesives, sealants</p> <p>PC2: Adsorbents</p> <p>PC8: Biocidal products</p> <p>PC9a: Coatings and paints, thinners, paint removers</p> <p>PC12: Lawn and garden preparations, including fertilizers (- Fertilizers)</p> <p>PC14: Metal surface treatment products, including galvanic and electroplating products</p> <p>PC15: Non-metal-surface treatment products</p> <p>PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents</p> <p>PC21: Laboratory chemicals</p> <p>PC23: Leather tanning, dye, finishing, impregnation and care products</p> <p>PC25: Metal working fluids</p> <p>PC26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids</p> <p>PC27: Plant protection products</p> <p>PC29: Pharmaceuticals</p> <p>PC31: Polishes and wax blends</p> <p>PC32: Polymer preparations and compounds</p> <p>PC33: Semiconductors</p> <p>PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids</p> <p>PC35: Washing and cleaning products (including solvent based products)</p> <p>PC37: Water treatment chemicals</p> <p>PC39: Cosmetics, personal care products</p>
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p>

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PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)  
 PROC7: Industrial spraying  
 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, pelettisation  
 PROC15: Use as laboratory reagent

Environmental Release Categories

ERC1: Manufacture of substances  
 ERC2: Formulation of preparations  
 ERC4: Industrial use of processing aids in processes and products, not becoming part of articles  
 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

**2.1 Contributing scenario controlling environmental exposure for: ERC1**

Activity	Manufacture	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
Amount used	Annual site tonnage (tons/year):	75000 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	7.000 m3/d
	Dilution Factor (River)	300
	Dilution Factor (Coastal Areas)	1.000
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,003 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Air	Passing of waste air through activated carbon filters
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by : , Biological wastewater treatment, ozonation or liquid phase carbon adsorption



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releases to soil  
Organizational measures to prevent/limit release from the site

Conditions and measures related to external treatment of waste for disposal

Waste treatment

Waste has to be treated as industrial waste and should be incinerated in thermal combustion.

Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.

**2.2 Contributing scenario controlling environmental exposure for: ERC6a**

Activity	Chemical synthesis.	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
Amount used	Annual site tonnage (tons/year):	8950 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	10.000 m3/d
	Dilution Factor (River)	40
	Dilution Factor (Coastal Areas)	400
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,007 %
	Emission or Release Factor: Soil	0 %
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	Air	Passing of waste air through activated carbon filters
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by ; Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
		Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.

**2.3 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d**

Activity	Chemical applications	
PA101212_003	4/39	EN

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Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
Amount used	Annual site tonnage (tons/year):	1010 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,005 %
	Emission or Release Factor: Soil	0 %
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	Air	Passing of waste air through activated carbon filters
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by : Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
		Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.

**2.4 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC10, PROC12, PROC13, PROC14, PROC15**

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC2, PROC3, PROC4, PROC5, PROC7, PROC10, PROC13, PROC14, PROC15)	
	Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC12)	
Conditions and measures related	Wear protective gloves/ protective clothing/ eye protection/ face protection.	

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to personal protection, hygiene  
and health evaluation

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC1	Manufacture	Fresh water	PEC	0,009mg/L	---
ERC6a	Chemical synthesis.	Fresh water	PEC	0,0063mg/L	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Fresh water	PEC	0,0086mg/L	---
ERC1	Manufacture	Marine water	PEC	0,0015mg/L	---
ERC6a	Chemical synthesis.	Marine water	PEC	0,0006mg/L	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Marine water	PEC	0,0008mg/L	---
ERC1	Manufacture	Soil	PEC	0,145µg/kg	---
ERC6a	Chemical synthesis.	Soil	PEC	0,151µg/kg	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Soil	PEC	0,117µg/kg	---
ERC1	Manufacture	Sewage treatment plant (STP)	PEC	0,63mg/L	---
ERC6a	Chemical synthesis.	Sewage treatment plant (STP)	PEC	0,146mg/L	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Sewage treatment plant (STP)	PEC	0,059mg/L	---

**Workers**

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(90% w/w)	Inhalation worker exposure	0,014mg/m <sup>3</sup>	---
PROC2	(90% w/w)	Inhalation worker exposure	0,142mg/m <sup>3</sup>	---
PROC3	(70% w/w)	Inhalation worker exposure	0,298mg/m <sup>3</sup>	---

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PROC4, PROC5, PROC15	(70% w/w)	Inhalation worker exposure	0,496mg/m <sup>3</sup>	---
PROC7, PROC14	(60% w/w)	Inhalation worker exposure	0,425mg/m <sup>3</sup>	---
PROC10	(60% w/w)	Inhalation worker exposure	0,85mg/m <sup>3</sup>	---
PROC12	(60% w/w)	Inhalation worker exposure	0,34mg/m <sup>3</sup>	---
PROC13	(60% w/w)	Inhalation worker exposure	0,85mg/m <sup>3</sup>	---

Good industrial hygiene practice has to be followed if oral exposure is not expected for workers. Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection.

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

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.

Environment

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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**1. Short title of Exposure Scenario 2: Distribution of substance**

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU4: Manufacture of food products 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 SU12: Manufacture of plastics products, including compounding and conversion SU14: Manufacture of basic metals, including alloys 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
Chemical product category	PC0: Other products: PC1: Adhesives, sealants PC8: Biocidal products PC12: Lawn and garden preparations, including fertilizers (- Fertilizers) PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC21: Laboratory chemicals PC25: Metal working fluids PC27: Plant protection products PC29: Pharmaceuticals PC31: Polishes and wax blends PC32: Polymer preparations and compounds PC33: Semiconductors PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals PC39: Cosmetics, personal care products
Process categories	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)
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

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ERC6b: Industrial use of reactive processing aids  
 ERC6c: Industrial use of monomers for manufacture of thermoplastics

**2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC6a, ERC6b, ERC6c**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 90%.
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	Air	Generally closed systems.
	Water	In case of leaks, wash away with plenty of water and flush to industrial wastewater treatment system., Do not release wastewater directly into environment.
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
		Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.

**2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC9**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 90%.
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and measures to control dispersion from source towards the worker		Provide extraction ventilation at points where emissions occur.
		Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC8a, PROC9)
		Provide local exhaust ventilation (LEV). (Efficiency: 97 %)(PROC8b)
Conditions and measures related to personal protection, hygiene and health evaluation		Wear protective gloves/ protective clothing/ eye protection/ face protection.

**3. Exposure estimation and reference to its source**

**Environment**

No environmental emissions are expected.

**Workers**

Used ECETOC TRA model.

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Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC8a	(70% w/w)	Inhalation worker exposure	0,99mg/m <sup>3</sup>	---
PROC8b	(90% w/w)	Inhalation worker exposure	0,21mg/m <sup>3</sup>	---
PROC9	(90% w/w)	Inhalation worker exposure	0,71mg/m <sup>3</sup>	---

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

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.

**Environment**

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

**Health**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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**1. Short title of Exposure Scenario 3: Use in Cleaning Agents**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available
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 ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 12%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
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	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for disposal	Waste treatment	If container is empty, trash as regular municipal waste.
	Disposal methods	Dispose of via regular municipal waste.



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Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.

**2.2 Contributing scenario controlling worker exposure for: PROC4, PROC10, PROC11, PROC13, PROC19**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 12%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	8 hours/day
	Frequency of use	220 days/year
	For a single worker	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection.	

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0037mg/L	---
---	Pulp bleaching	Marine water	PEC	0,294µg/L	---
---	Pulp bleaching	Soil	PEC	0,111µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

**Workers**

ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	Spray cleaning, (7% w/w)	Inhalation worker exposure	0,002mg/m <sup>3</sup>	---
---	Cleaning surfaces by wiping, brushing., (7% w/w)	Inhalation worker exposure	1,07mg/m <sup>3</sup>	---
---	Sanitary cleaner, (12%)	Inhalation worker	1,16mg/m <sup>3</sup>	---

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	w/w)	exposure		
---	Using cleaner containing H <sub>2</sub> O <sub>2</sub> , (7% w/w)	Inhalation worker exposure	1,07mg/m <sup>3</sup>	---

Some products that are on the market contain more than 12% w/w It is recommended that consumers use gloves and safety glasses when handling pure or barely diluted products Good industrial hygiene practice has to be followed if oral exposure is not expected for workers.

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

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.

Environment

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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**1. Short title of Exposure Scenario 4: Use in Cleaning Agents**

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC21: Laboratory chemicals PC35: Washing and cleaning products (including solvent based products)
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 ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 12%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
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	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for disposal	Waste treatment	If container is empty, trash as regular municipal waste.
	Disposal methods	Dispose of via regular municipal waste.
		Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.

**2.2 Contributing scenario controlling consumer exposure for: PC21, PC35**

Product characteristics	Concentration of the	Covers concentrations up to 12%
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	Substance in Mixture/Article	
	Physical Form (at time of use)	liquid
Amount used	Covers concentrations up to ....	0,11 kg
Frequency and duration of use	Exposure duration per event	20 min
	Frequency of use	365 days/year
	Frequency of use	1 Times per day

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0037mg/L	---
---	Pulp bleaching	Marine water	PEC	0,294µg/L	---
---	Pulp bleaching	Soil	PEC	0,111µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

**Consumers**

ConsExpo 4.1 (Consumer inhalation exposure).

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	Spray cleaning, (7% w/w)	Consumer inhalation exposure	0,002mg/m <sup>3</sup>	---
---	Cleaning surfaces by wiping, brushing., (7% w/w)	Consumer inhalation exposure	1,07mg/m <sup>3</sup>	---
---	Sanitary cleaner, (16% w/w)	Consumer inhalation exposure	1,16mg/m <sup>3</sup>	---

Consumers normally do not come into contact with products containing more than 12% w/w of the substance It is recommended that consumers use gloves and safety glasses when handling pure or barely diluted products Under normal conditions of use oral exposure to bleaches can be neglected

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

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For scaling see: <http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp>  
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: Use in agrochemicals**

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU1: Agriculture, forestry, fishery SU2: Mining (including offshore industries) SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
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
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids

**2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b**

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
Amount used	Regional use tonnage (tons/year):	2645 ton(s)/year
	Annual amount per site	4,93 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	Emission or Release Factor: Water	0,05 %
	Emission or Release Factor: Soil	0,8 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	No specific waste treatment required/proposed

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Route of Exposure	Inhalation exposure (PROC3, PROC4)
	Application Area	Industrial use (PROC3, PROC4)

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Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC3, PROC4)	
Route of Exposure	Inhalation exposure (PROC3, PROC4)
Application Area	Industrial use (PROC3, PROC4)

Conditions and measures related to personal protection, hygiene and health evaluation

Wear protective gloves/ protective clothing/ eye protection/ face protection.	
Route of Exposure	Inhalation exposure (PROC3, PROC4)
Application Area	Industrial use (PROC3, PROC4)
Wear respiratory protection (Efficiency: 90 %)(PROC3, PROC4)	

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0085mg/L	---
---	Pulp bleaching	Marine water	PEC	0,775µg/L	---
---	Pulp bleaching	Soil	PEC	0,113µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,088mg/L	---

**Workers**

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(50% w/w), Indoor use.	Inhalation worker exposure	0,007mg/m <sup>3</sup>	---
PROC2	(50% w/w), Indoor use.	Inhalation worker exposure	0,708mg/m <sup>3</sup>	---
PROC3	(50% w/w), Indoor use.	Inhalation worker exposure	0,213mg/m <sup>3</sup>	---
PROC4	(50% w/w), Indoor use.	Inhalation worker exposure	0,354mg/m <sup>3</sup>	---
PROC1	(50% w/w), Outdoor use.	Inhalation worker exposure	0,005mg/m <sup>3</sup>	---
PROC2	(50% w/w), Outdoor use.	Inhalation worker exposure	0,496mg/m <sup>3</sup>	---
PROC3	(50% w/w), Outdoor use.	Inhalation worker exposure	0,149mg/m <sup>3</sup>	---
PROC4	(50% w/w), Outdoor use.	Inhalation worker exposure	0,248mg/m <sup>3</sup>	---

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Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection. Good industrial hygiene practice has to be followed if oral exposure is not expected for workers.

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

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.

Environment

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.



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**1. Short title of Exposure Scenario 6: Use in agrochemicals**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU1: Agriculture, forestry, fishery SU2: Mining (including offshore industries) SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
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
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 ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e**

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
Amount used	Regional use tonnage (tons/year):	2645 ton(s)/year
	Annual amount per site	4,93 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	Emission or Release Factor: Water	0,05 %
	Emission or Release Factor: Soil	0,8 %

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Route of Exposure	Inhalation exposure (PROC3, PROC4)
	Application Area	Industrial use (PROC3, PROC4)
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC3, PROC4)	
	Route of Exposure	Inhalation exposure (PROC3, PROC4)

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	Application Area	Industrial use (PROC3, PROC4)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection.	
	Route of Exposure	Inhalation exposure (PROC3, PROC4)
	Application Area	Industrial use (PROC3, PROC4)
	Wear respiratory protection (Efficiency: 90 %)(PROC3, PROC4)	

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0085mg/L	---
---	Pulp bleaching	Marine water	PEC	0,775µg/L	---
---	Pulp bleaching	Soil	PEC	0,113µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,088mg/L	---

**Workers**

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Inhalation worker exposure	0,007mg/m <sup>3</sup>	---
PROC2	(50% w/w)	Inhalation worker exposure	0,708mg/m <sup>3</sup>	---
PROC3	(50% w/w)	Inhalation worker exposure	0,213mg/m <sup>3</sup>	---
PROC4	(50% w/w)	Inhalation worker exposure	0,354mg/m <sup>3</sup>	---
PROC1	(50% w/w)	Inhalation worker exposure	0,005mg/m <sup>3</sup>	---
PROC2	(50% w/w)	Inhalation worker exposure	0,496mg/m <sup>3</sup>	---
PROC3	(50% w/w)	Inhalation worker exposure	0,149mg/m <sup>3</sup>	---
PROC4	(50% w/w)	Inhalation worker exposure	0,248mg/m <sup>3</sup>	---

Good industrial hygiene practice has to be followed if oral exposure is not expected for workers. Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection.

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

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.

**Environment**

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

**Health**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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**1. Short title of Exposure Scenario 7: Use in agrochemicals**

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Sectors of end-use	SU1: Agriculture, forestry, fishery SU2: Mining (including offshore industries) SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
Chemical product category	PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents PC37: Water treatment chemicals
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 ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e**

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
Amount used	Regional use tonnage (tons/year):	2645 ton(s)/year
	Annual amount per site	4,93 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	Emission or Release Factor: Water	0,05 %
	Emission or Release Factor: Soil	0,8 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	No specific waste treatment required/proposed

**2.2 Contributing scenario controlling consumer exposure for: , PC20, PC37**

No consumer exposure anticipated

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%

**3. Exposure estimation and reference to its source**

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**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0085mg/L	---
---	Pulp bleaching	Marine water	PEC	0,775µg/L	---
---	Pulp bleaching	Soil	PEC	0,113µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,088mg/L	---

**Consumers**

No consumer exposure anticipated

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

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 8: Use as a bleach**

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU6a: Manufacture of wood and wood products
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 PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids

**2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b**

Activity	Pulp bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	17.500 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by : , Biological wastewater treatment, ozonation or liquid phase carbon adsorption

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releases to soil  
Organizational measures to prevent/limit release from the site

Conditions and measures related to external treatment of waste for disposal

Waste treatment

Waste has to be treated as industrial waste and should be incinerated in thermal combustion.

Highly reactive., Seal and return containers., No environmental emissions are expected.

**2.2 Contributing scenario controlling environmental exposure for: ERC4, ERC6b**

Activity	Other bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
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	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by ; Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
		Highly reactive., Seal and return containers., No environmental emissions are expected.

**2.3 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC13, PROC19**

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Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC2, PROC3, PROC4, PROC13)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection.	

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0098mg/L	---
---	Pulp bleaching	Marine water	PEC	0,001mg/L	---
---	Pulp bleaching	Soil	PEC	0,154µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,098mg/L	---
---	Other bleaching	Fresh water	PEC	0,004mg/L	---
---	Other bleaching	Marine water	PEC	0,0004mg/L	---
---	Other bleaching	Soil	PEC	0,128µg/kg	---
---	Other bleaching	Sewage treatment plant (STP)	PEC	0,042mg/L	---

**Workers**

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(35% w/w)	Inhalation worker exposure	0,005mg/m <sup>3</sup>	---
PROC2	(35% w/w)	Inhalation worker exposure	0,05mg/m <sup>3</sup>	---
PROC3	(35% w/w)	Inhalation worker exposure	0,149mg/m <sup>3</sup>	---
PROC4	(35% w/w)	Inhalation worker	0,248mg/m <sup>3</sup>	---



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		exposure		
PROC13	(35% w/w)	Inhalation worker exposure	0,496mg/m <sup>3</sup>	---

Good industrial hygiene practice has to be followed if oral exposure is not expected for workers. Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection.

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

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.

**Environment**

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

**Health**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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**1. Short title of Exposure Scenario 9: Use as a bleach**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU6a: Manufacture of wood and wood products
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 PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available
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 ERC8e: Wide dispersive outdoor use of reactive substances in open systems

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e**

Activity	Pulp bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	17.500 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
	Other data. Other information	Pulp bleaching:
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam

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measures to reduce or limit discharges, air emissions and releases to soil  
Organizational measures to prevent/limit release from the site

	stripping, must be treated by : Biological wastewater treatment, ozonation or liquid phase carbon adsorption
--	--

Conditions and measures related to external treatment of waste for disposal

Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
Highly reactive., Seal and return containers., No environmental emissions are expected.	

**2.2 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e**

Activity	Other bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0,01 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
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	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by : Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Seal and return containers., No environmental emissions are expected.	

**2.3 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4,**

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**PROC13, PROC19**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC2, PROC3, PROC4, PROC13, PROC19)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection.	

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0098mg/L	---
---	Pulp bleaching	Marine water	PEC	0,001mg/L	---
---	Pulp bleaching	Soil	PEC	0,154µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,098mg/L	---
---	Other bleaching	Fresh water	PEC	0,004mg/L	---
---	Other bleaching	Marine water	PEC	0,0004mg/L	---
---	Other bleaching	Soil	PEC	0,128µg/kg	---
---	Other bleaching	Sewage treatment plant (STP)	PEC	0,042mg/L	---

**Workers**

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(35% w/w)	Inhalation worker exposure	0,005mg/m <sup>3</sup>	---
PROC2	(35% w/w)	Inhalation worker exposure	0,496mg/m <sup>3</sup>	---
PROC3	(35% w/w)	Inhalation worker exposure	0,298mg/m <sup>3</sup>	---

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PROC4	(35% w/w)	Inhalation worker exposure	0,992mg/m <sup>3</sup>	---
PROC13	(35% w/w)	Inhalation worker exposure	0,34mg/m <sup>3</sup>	---
PROC19	(35% w/w)	Inhalation worker exposure	0,85mg/m <sup>3</sup>	---

Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection. Good industrial hygiene practice has to be followed if oral exposure is not expected for workers.

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

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.

Environment

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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**1. Short title of Exposure Scenario 10: Use in cosmetics**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems

**2.1 Contributing scenario controlling environmental exposure for: ERC8b**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
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	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for disposal	Disposal methods	If container is empty, trash as regular municipal waste., Dispose of via regular municipal waste.
		Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.

**2.2 Contributing scenario controlling worker exposure for: PROC19**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
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Frequency and duration of use	Intermittent use/release
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection.

**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0037mg/L	---
---	Pulp bleaching	Marine water	PEC	0,294µg/L	---
---	Pulp bleaching	Soil	PEC	0,111µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

**Workers**

Not to be assessed

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

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.

**Environment**

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

**Health**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

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**1. Short title of Exposure Scenario 11: Use as a bleach**

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Sectors of end-use	SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU6a: Manufacture of wood and wood products
Chemical product category	PC23: Leather tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products PC26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids
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 ERC8e: Wide dispersive outdoor use of reactive substances in open systems

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	17.500 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Seal and return containers., No environmental emissions are expected.	

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e**

Activity	Other bleaching	
Product characteristics	Concentration of the	Covers concentrations up to 35%



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	Substance in Mixture/Article	
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0,01 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
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	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by : Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
		Highly reactive., Seal and return containers., No environmental emissions are expected.

**2.3 Contributing scenario controlling consumer exposure for: PC23, PC24, PC26, PC34**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Amount used per event	0,1 l
Frequency and duration of use	Exposure duration per event	10 min
	Frequency of use	4 events/week

**3. Exposure estimation and reference to its source**

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**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0098mg/L	---
---	Pulp bleaching	Marine water	PEC	0,001mg/L	---
---	Pulp bleaching	Soil	PEC	0,154µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,098mg/L	---
---	Other bleaching	Fresh water	PEC	0,004mg/L	---
---	Other bleaching	Marine water	PEC	0,0004mg/L	---
---	Other bleaching	Soil	PEC	0,128µg/kg	---
---	Other bleaching	Sewage treatment plant (STP)	PEC	0,042mg/L	---

**Consumers**

Based on EU Risk Assessment Report, European Commission 2003

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	---	Consumer inhalation exposure	0,13mg/m <sup>3</sup>	---

Under normal conditions of use oral exposure to bleaches can be neglected Consumers normally do not come into contact with products containing more than 12% w/w of the substance Some products that are on the market contain more than 12% w/w It is recommended that consumers use gloves and safety glasses when handling pure or barely diluted products

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

If the local conditions deviate significantly from the values in the EU RAR, then further site specific evaluation is required  
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

**SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006**

**Hydrogen peroxide solution...%**

Version 1.0

Print Date 27.02.2013

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**1. Short title of Exposure Scenario 12: Use in cosmetics**

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC39: Cosmetics, personal care products
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems
Activity	Use for hair bleaching and dyeing and tooth bleaching

**2.1 Contributing scenario controlling environmental exposure for: ERC8b**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
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	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for disposal	Disposal methods	If container is empty, trash as regular municipal waste., Dispose of via regular municipal waste.
		Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.

**2.2 Contributing scenario controlling consumer exposure for: PC39**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
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Physical Form (at time of use)	liquid
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Frequency and duration of use	Intermittent use/release
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**3. Exposure estimation and reference to its source**

**Environment**

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0037mg/L	---
---	Pulp bleaching	Marine water	PEC	0,294µg/L	---
---	Pulp bleaching	Soil	PEC	0,111µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

**Consumers**

No consumer exposure anticipated

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

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