SAFETY DATA SHEET

POTASSIUM HYDROXIDE SOLID

Compilation date: 29/11/2010

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Revision No: 8.1

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

1.1. Product identifier

Product name: POTASSIUM HYDROXIDE SOLID

REACH registered number(s): 01-2119487136-33-XXXX

CAS number: 1310-58-3

EINECS number: 215-181-3

Index number: 019-002-00-8

Synonyms: CAUSTIC POTASH

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

Use of substance / mixture: Fertiliser ingredient. Electroplating / photographic reagent. Battery electrolyte. Soap raw material. Reagent (carbon dioxide absorbtion process).

1.3. Details of the supplier of the safety data sheet

Company name: Resource Chemical Ltd

Resource House

76 High Street

Brackley

Northants

NN13 7DS

Tel: +44(0)1280 843800

Fax: +44(0)1280 701745

Email: sales@resourcechemical.ltd.uk

1.4. Emergency telephone number

Emergency tel: +44(0)1270 502891

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CHIP: Xn: R22; C: R35

Classification under CLP: Acute Tox. 4: H302; Skin Corr. 1A: H314; Met. Corr. 1: H290

Most important adverse effects: Harmful if swallowed. Causes severe burns.

2.2. Label elements

Label elements under CLP:

Hazard statements: H302: Harmful if swallowed.

H314: Causes severe skin burns and eye damage.

H290: May be corrosive to metals.

[cont...]

Signal words: Danger

Hazard pictograms: GHS05: Corrosion

GHS07: Exclamation mark

Precautionary statements: * P260: Do not breathe dust.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P303+361+353: IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water/shower.

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310: Immediately call a POISON CENTER or doctor.

P406: Store in corrosive resistant container with a resistant inner liner.

Label elements under CHIP:

Hazard symbols: Corrosive.

Risk phrases: R22: Harmful if swallowed.

R35: Causes severe burns.

Safety phrases: S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39: Wear suitable protective clothing, gloves and eye / face protection.

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Hazardous ingredients:

POTASSIUM HYDROXIDE

EINECS	CAS	CHIP Classification	CLP Classification	Percent
215-181-3	1310-58-3	Xn: R22; C: R35	Acute Tox. 4: H302; Skin Corr. 1A: H314	70-90%

Section 4: First aid measures

[cont...]

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Transfer to hospital if there are burns or symptoms of poisoning.

Eye contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: Wash out mouth with water. Do not induce vomiting. Give 1 cup of water to drink every 10 minutes. If unconscious, check for breathing and apply artificial respiration if necessary. If unconscious and breathing is OK, place in the recovery position. Transfer to hospital as soon as possible.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If unconscious and breathing is OK, place in the recovery position. If conscious, ensure the casualty sits or lies down. If breathing becomes bubbly, have the casualty sit and provide oxygen if available. Transfer to hospital as soon as possible.

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

Skin contact: Blistering may occur. Progressive ulceration will occur if treatment is not immediate.

Eye contact: Corneal burns may occur. May cause permanent damage.

Ingestion: Corrosive burns may appear around the lips. Blood may be vomited. There may be bleeding from the mouth or nose.

Inhalation: There may be shortness of breath with a burning sensation in the throat. Exposure may cause coughing or wheezing.

Delayed / immediate effects: Immediate effects can be expected after short-term exposure.

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

Immediate / special treatment: Eye bathing equipment should be available on the premises.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: Corrosive. In combustion emits toxic fumes.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

[cont...]

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: If outside keep bystanders upwind and away from danger point. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Do not attempt to take action without suitable protective clothing - see section 8 of SDS. Do not create dust.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Clean-up should be dealt with only by qualified personnel familiar with the specific substance. Transfer to a closable, labelled salvage container for disposal by an appropriate method.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS. Refer to section 13 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Avoid direct contact with the substance. Ensure there is sufficient ventilation of the area. Do not handle in a confined space. Avoid the formation or spread of dust in the air.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in cool, well ventilated area. Keep container tightly closed.

7.3. Specific end use(s)

Specific end use(s): No special requirement.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

POTASSIUM HYDROXIDE

Workplace exposure limits: **Respirable dust**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
UK	-	2 mg/m3	-	-

DNEL/PNEC Values

DNEL / PNEC No data available.

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency. Respiratory protective device with particle filter.

[cont...]

Hand protection: Rubber gloves. Neoprene gloves.

Eye protection: Tightly fitting safety goggles. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Environmental: Refer to specific Member State legislation for requirements under Community environmental legislation.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Solid

Colour: White

Odour: Odourless

Evaporation rate: Not applicable.

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Soluble

Also soluble in: Ethanol.

Boiling point/range°C: 1327

Melting point/range°C: 406

Flammability limits %: lower: Not applicable.

upper: Not applicable.

Flash point°C: Not applicable.

Part.coeff. n-octanol/water: No data available.

Autoflammability°C: Not applicable.

Vapour pressure: Not applicable.

Relative density: 2.04

pH: 13.5

VOC g/l: Not applicable.

9.2. Other information

Other information: No data available.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

[cont...]

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values:

Route	Species	Test	Value	Units
ORAL	RAT	LD50	333	mg/kg

Hazardous ingredients:

POTASSIUM HYDROXIDE

ORL	RAT	LD50	273	mg/kg

Relevant effects for mixture:

Effect	Route	Basis
Acute toxicity (harmful)	ING	Hazardous: calculated
Corrosivity	OPT INH DRM	Hazardous: calculated

Symptoms / routes of exposure

Skin contact: Blistering may occur. Progressive ulceration will occur if treatment is not immediate.

Eye contact: Corneal burns may occur. May cause permanent damage.

Ingestion: Corrosive burns may appear around the lips. Blood may be vomited. There may be bleeding from the mouth or nose.

Inhalation: There may be shortness of breath with a burning sensation in the throat. Exposure may cause coughing or wheezing.

Delayed / immediate effects: Immediate effects can be expected after short-term exposure.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values:

Species	Test	Value	Units
FISH	96H LC50	50-165	mg/l
DAPHNIA	48H EC50	30-1000	mg/l

12.2. Persistence and degradability

Persistence and degradability: Not applicable.

12.3. Bioaccumulative potential

Bioaccumulative potential: Not applicable.

[cont...]

12.4. Mobility in soil

Mobility: Absorbed only slowly into soil.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Negligible ecotoxicity.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Transfer to a suitable container and arrange for collection by specialised disposal company.

Disposal of packaging: Dispose of in a regulated landfill site or other method for hazardous or toxic wastes.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN1813

14.2. UN proper shipping name

Shipping name: POTASSIUM HYDROXIDE, SOLID

14.3. Transport hazard class(es)

Transport class: 8

14.4. Packing group

Packing group: II

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: E

Transport category: 2

Section 15: Regulatory information

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

Specific regulations: Not applicable.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has been carried out for the substance or the mixture by the supplier.

[cont...]

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010.

This safety data sheet is prepared in accordance with Commission Regulation (EC) No 1272/2008.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H290: May be corrosive to metals.

H302: Harmful if swallowed.

H314: Causes severe skin burns and eye damage.

R22: Harmful if swallowed.

R35: Causes severe burns.

Legend to abbreviations: PNEC = predicted no effect level

DNEL = derived no effect level

LD50 = median lethal dose

LC50 = median lethal concentration

EC50 = median effective concentration

IC50 = median inhibitory concentration

dw = dry weight

bw = body weight

cc = closed cup

oc = open cup

MUS = mouse

GPG = guinea pig

RBT = rabbit

HAM = hamster

HMN = human

MAM = mammal

PGN = pigeon

IVN = intravenous

SCU = subcutaneous

SKN = skin

DRM = dermal

OCC = ocular/corneal

PCP = phycico-chemical properties

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

Appendix: Exposure scenarios

List of Exposure Scenarios
Exposure Scenario 1: Industrial and professional use of KOH
Exposure Scenario 2: Consumer use of solid and liquid KOH (excl. batteries)

Exposure scenarios and corresponding use descriptors

Exposure scenarios	Title of Exposure Scenario	PC	SU	PROC	AC	ERC
ES1	Industrial and professional use of KOH	0-40	3-23	1, 2, 3, 4, 5, 8a, 8b, 9, 13, 14, 15	Not applicable	2, 4, 5, 6, 7, 8a
ES2	Consumer use of solid and liquid KOH (excl. batteries)	9, 12, 20, 28, 35, 39	21	Not applicable	Not applicable	8a, 8b, 8d, 9a

Exposure Scenario 1: Industrial and professional use of KOH

Section 1	**Title of Exposure Scenario**
Title	Industrial and professional use of KOH
Systematic title based on use descriptor	
Sectors of use:	SU 1-23
Environmental release categories:	ERC2 Formulation of preparations 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 ERC7 Industrial use of substances in closed systems ERC8a Wide dispersive indoor use of processing aids in open systems
Process category:	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) 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) PROC13 Treatment of articles by dipping and pouring PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15 Use as laboratory reagent
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of environmental exposure**
Characteristics of chemical products	
Physical form of the product	
Solid/ Liquid.	
Concentration of substance in product	
Covers percentage substance in the product up to 100 %. Solid: Low dustiness.	
Frequency and duration of use	
Continuous.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk management measures related to the environment aim to avoid discharging KOH solutions into municipal wastewater or to surface water, in case such discharges are expected to cause significant and undesired pH changes. Adequate 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. There are additionally some specific environmental risk management measures related to fertilizers containing up to 20% of KOH in the end product. Direct releases to adjacent surface waters should be avoided. Drift should be minimized. And in line with the requirements for good agricultural practice, agricultural soil should be analysed prior to application of the fertiliser and the application rate should be adjusted according to the results of the analysis.	

Conditions and measures related to external treatment of waste for disposal

There is no solid waste of KOH. Liquid waste should be reused or discharged to the industrial wastewater and further neutralized if needed.

Section 2.2	**Control of workers exposure**

Characteristics of chemical products

Physical form of the product

Solid/ Liquid.

Concentration of substance in product

Covers percentage substance in the product up to 100 %. Solid: Low dustiness.

Frequency and duration of use

8 hour(s)/ day, 200 days/ Year(s).

Technical conditions and measures at process level (source) to prevent release

Worker (Both solid and liquid KOH containing products at concentration > 2%):

Replacing, where appropriated, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes:

- Use closed systems or covering of open containers (e.g. screens)
- Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.)
- Use of pliers, grip arms with long handles with manual use “to avoid direct contact and exposure by splashes (no working over one’s head)”

Technical conditions and measures to control dispersion from source towards the worker

Worker (Both solid and liquid KOH containing products at concentration > 2%):
Local exhaust ventilation and/or general ventilation is good practice.

Organisational measures to prevent /limit releases, dispersion and exposure

Worker (Both solid and liquid KOH containing products at concentration > 2%):

- Workers in the risky process/areas identified should be trained a) to avoid to work without respiratory protection and b) to understand the corrosive properties and, especially, the respiratory inhalation effects of potassium hydroxide and c) to follow the safer procedures instructed by the employer.
- The employer has also to ascertain that the required PPE is available and used according to instructions.
- Where possible for professional use, use of specific dispensers and pumps specifically designed to prevent splashes/spills/exposure to occur.

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

Worker/ Professional (Both solid and liquid KOH containing products at concentration > 2%):

- Respiratory protection: In case of dust or aerosol formation (e.g. spraying): A suitable dust mask or dust respirator with filter type P may be appropriate.
- Hand protection: Impervious gloves.
  - Material: Butyl rubber, PVC, polychloroprene with natural latex liner
    Material thickness: 0.5 mm
    Breakthrough time: >480 min
  - Material: Nitrile rubber, fluorinated rubber
    Material thickness: 0.35 – 0.40 mm
    Breakthrough time: >480 min
- If splashes are likely to occur: Safety spectacles/goggles/full face shield. Apron or other light protective clothing, boots and synthetic rubber gloves.

Section 3	**Exposure estimation**

3.1. Environment

The aquatic effect and risk assessment only dealswith the effect on organisms/ecosystems due to possible pH changes related to OH- discharges, as the toxicity of the K+ ion is expected to be insignificant compared to the (potential) pH effect. The high water solubility and very low vapour pressure indicate that KOH will be found predominantly in water.
When the risk management measures related to the environment are implemented, there is no exposure to the activated sludge of a sewage treatment plant and there is not exposure of the receiving surface water.
The sediment compartment is not considered, because it is not considered relevant for KOH. If emitted to the aquatic compartment, sorption to sediment particles will be negligible.
Significant emissions to air are not expected due to the very low vapour pressure of KOH. If emitted to air as an aerosol in water, KOH will be rapidly neutralised as a result of its reaction with CO2 (or other acids).
Significant emissions to the terrestrial environment are not expected either. The sludge application route is not relevant for the emission to agricultural soil, as no sorption of KOH to particulate matter will occur in STPs/WWTPs. If emitted to soil, sorption to soil particles will be negligible. Depending on the buffer capacity of the soil, OH- will be neutralised in the soil pore water or the pH may increase.
The substance has no potential for bioaccumulation.

3.2. Worker

KOH is a corrosive substance. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to KOH was not quantified.

KOH is not expected to be systemically available in the body under normal handling and use conditions and therefore systemic effects of KOH after dermal or inhalation exposure are not expected to occur.

The ECETOC TRA tool has been used to estimate the inhalation exposure (see Table below).
It was assumed that there is no local exhaust ventilation and no respiratory protection unless specified otherwise. The duration of exposure was set at more than 4 hours per day as a worst-case assumption and professional use was specified where relevant as a worst-case assumption. For the solid, the low dustiness class was selected because KOH is very hygroscopic. Only the most relevant PROCs were considered in the assessment.

The maximum estimated inhalation concentration is 0.6 mg/m^3. This value has been used for risk characterisation.

Taken into account the DNEL (acute/longterm inhalation-local) of 1 mg/m^3: the **Risk Characterisation Ratio (RCR) = 0.6**

Exposure estimates for workers (Inhalation - worst case)

Process category [PROC]	**Liquid (mg/m³) ECETOC TRA v3**	**Solid (mg/m³) worst case - ECETOC TRA v3 & MEASE 1.02**
PROC1 Use in closed process, no likelihood of exposure	0.01	0.01
PROC2 Use in closed, continuous process with occasional controlled exposure	0.1	0.01
PROC3 Use in closed batch process (synthesis or formulation)	0.1	0.1
PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises	0.1	0.6 (< 4 hour(s) Duration)
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	0.1	0.6 (< 4hour(s) Duration)
PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	0.1	0.5
PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	0.1	0.5
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	0.1	0.5
PROC13 Treatment of articles by dipping and pouring	0.1	0.5
PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation	0.1	0.6 (< 4 hour(s) Duration)
PROC15 Use as laboratory reagent	0.1	0.6 (< 4 hour(s) Duration)

Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
Evaluation guidance to downstream user	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels
4.2. Environment	
Evaluation guidance to downstream user	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 2: Consumer use of solid and liquid KOH (excl. batteries)

Section 1	**Title of Exposure Scenario**
Title	Consumer use of solid and liquid KOH (excl. batteries)
Systematic title based on use descriptor	
Sectors of use:	SU21 Consumer uses: Private households
Chemical product category:	PC9a Coatings and paints, thinners, paint removers PC9b Fillers, putties, plasters, modelling clay PC12 Fertilizers PC20 Products such as ph-regulators, flocculants, precipitants, neutralization agents PC28 Perfumes, fragrances PC35 Washing and cleaning products (including solvent based products) PC39 Cosmetics, personal care products However, it could potentially also be used in other chemical product categories (PC 0 -40)
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 ERC9a Wide dispersive indoor use of substances in closed systems The environmental release categories mentioned above are assumed to be the most important ones but other wide dispersive environmental release categories could also be possible (ERC 8 - 11b).
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of environmental exposure**
Characteristics of chemical products	
Physical form of the product	
Solid/ Liquid.	
Concentration of substance in product	
Covers percentage substance in the product up to 100 %. Solid: Low dustiness.	
Frequency and duration of use	
Continuous.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
This material and its container must be disposed of in a safe way. (e.g. by returning to a public recycling facility). If container is empty, dispose as regular municipal waste.	
Section 2.2	**Control of workers exposure**
Characteristics of chemical products	
Physical form of the product	
Solid/ Liquid.	
Concentration of substance in product	
Covers percentage substance in the product up to 100 %. Solid: Low dustiness. Practically no KOH is left in the final consumer product as the amounts used will interact with other ingredients in acid-base reactions. However, some cleaning products may contain 0.25-0.45% of KOH in the final formulation. Some toilet cleaners may contain up to 1.1% and certain soaps contain up to 0.5% of KOH in the final formulation.	

Conditions and measures related to the design of the product
o It is required to use resistant labelling-package to avoid its auto-damage and loss of the label integrity, under normal use and storage of the product. The lack of quality of the package provokes the physical loss of information on hazards and use instructions. o It is required that household chemicals, containing KOH for more than 2%, which may be accessible to children should be provided with a child-resistant fastening (currently applied) and a tactile warning of danger (Adaptation to Technical Progress of the Directive 1999/45/EC, annex IV, Part A and Article 15(2) of Directive 67/548 in the case of, respectively, dangerous preparations and substances intended for domestic use). This would prevent accidents by children and other sensitive groups of society. o It is advisable to deliver only in very viscous preparations. o It is advisable to delivery only in small amounts.
Conditions and measures related to information and behavioural advice to consumers
It is required that appropriate use instructions, and product information should always be provided to consumers. This clearly can reduce the risk of misuse. For reducing the number of accidents, it is advisable to use these products in the absence of children or other potential sensitive groups. To prevent improper use of KOH, instructions for use should contain a warning against dangerous mixtures. Instructions addressed to consumers: o Keep out of reach of children. o Do not apply product into ventilator openings or slots.
Conditions and measures related to personal protection, hygiene and health evaluation
Both solid and liquid KOH containing products at concentration > 2%: o Respiratory protection: In case of dust or aerosol formation (e.g. spraying): A suitable dust mask or dust respirator with filter type P may be appropriate. o Hand protection: Impervious gloves. o If splashes are likely to occur: Safety spectacles/goggles/full face shield.

Section 3	**Exposure estimation**
3.1. Environment	
Consumer uses relates to already diluted products which will further be neutralized quickly in the sewer, well before reaching a WWTP or surface water.	
3.2. Consumer	
If the recommended RMMs are respected, local exposure through inhalation will not be higher compared to inhalation exposures in ES1. Therefore, the consumer exposure through inhalation was not further quantified.	
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	
Evaluation guidance to downstream user	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels
4.2. Environment	
Evaluation guidance to downstream user	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.