MATERIAL SAFETY DATA SHEET

SODIUM HYDROXIDE r-r 50%

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EN 8.0

This MSDA is accordant to Regulation EC 1907/2006 dated 18.12.2006 – REACH and 2020/878 dated 18.06.2010.

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

1.1. Product identifier

SODIUM HYDROXIDE r-r 50%
REACH Registration no.: 01-2119457892-27-0025
CAS no. 1310-73-2
EU index no. 011-002-00-6 EC
no. 215-185-5

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

Identified uses: SN3 - industrial and professional uses
SN4 - consumer use
In chemical, textile, household chemical, pulp and paper, rubber and pharmaceutical industries

Uses advised against: Not specified.

1.3. Data of the supplier of the MSDS

Distributor:
TOMCHEM Sp. z o.o.
95-050 Konstantynów Łódzki
ul. Niesięcin 5A
tel. 42 683-11-83
tel./fax.: 42-636-43-18

E-mail address of the person responsible for the material safety data sheet: info@spin-doradztwo.pl.

1.4. Emergency phone number 112 (general emergency phone), 998 (fire department), 999 (medical emergency);

SECTION 2: Identification of hazards

2.1. Classification of the substance or mixture acc. to Regulation 1272/2008:
Met. Corr. 1; H290
Skin Corr. 1A; H314

Hazard for human health
Causes severe skin burns and eye damage.
Hazards for the environment
The product is not classified hazardous for the environment. By changing the pH it may adversely affect aquatic organisms.
Physical and chemical hazards
May be corrosive to metals.

2.2. Label elements
Pictograph:

Warnings: Hazard

Hazard statement:
H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.

Precautionary statements:
P260 - Do not inhale dust/vapors
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P310 - Call a POISON CENTER or doctor/physician

2.3. Other hazards
Appendix XIII to the Regulation REACH - Criteria of identification of persistent, bioaccumulative and toxic substances (PBT) and very persistent and very bioaccumulative substances (vPvB) - not applicable

Substances with endocrine disrupting properties (according to the criteria of Commission Delegated Regulation (EU) 2017/2100, Commission Regulation (EU) 2018/605) - not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Product identifier	**Content %**	**Hazard class and category codes**	**Hazard statement codes and supplementary phrases**	**- Specific threshold - M coefficient - Estimated Acute Toxicity (ATE)**
Sodium hydroxide* CAS: 1310-73-2 EC: 215-185-5 Index no. 011-002-00-6 REACH no. 01-2119457892-27-XXXX	min.49%	Skin Corr. 1 A	H314	Skin Corr. 1A; H314: C ≥ 5 % Skin Corr. 1B; H314 2 % ≤ C < 5 % Skin Irrit. 2; H315: 0.5 % ≤ C < 2 % Eye Irrit.2; H319: 0.5 % ≤ C < 2 %

Full text of H statements in section 16
*substance with a specific NDS value.

3.2. Mixtures
Not applicable.

SECTION 4: First aid measures

4.1. Description of first aid measures
In case of skin contact:
Remove all soiled clothing, wash the skin with plenty of water. Apply a sterile dressing to the burned area. Do not use any antacids. Consult a doctor.
Contact with eyes:
Flush eyes for several minutes (approx. 15 min.) with plenty of water, keep the eyelids wide open. Avoid heavy jets because of a risk of damage to the cornea, contact the doctor.
If inhaled:
In case of dizziness or nausea remove a victim to a fresh air; contact a doctor is the symptoms persist. If shortness of breath occurs, administer the oxygen.
If swallowed:
Flush mouth with water. Give a large amount of water to drink. Do not induce vomiting (risk of perforation), contact a doctor immediately. Never administer anything into the mouth if a victim is unconscious.

4.2. The most significant acute and delayed symptoms and effects of the exposure
Skin contact: chemical burns, hard-to-heal wounds.
Eye contact: chemical burns - risk of permanent eye damage; 1-2% solution damages the cornea and can cause corneal opacity and conjunctival congestion within 1-10min.
Respiratory system: chemical irritation of the mucous membranes of the nose, throat and distal segments of the respiratory system, Gastrointestinal tract: chemical burns of the mouth, throat, diffuse necrosis of the gastrointestinal tract with risk of perforation.

4.3. Recommendations regarding immediate doctor's aid and detailed procedure of treatment of a victim.
If a victim is unconscious, make sure the airway is clear and place the victim in the recovery position. Provide medical assistance.
Decision on how to proceed is made by a doctor after assessment of the condition of the affected person.

SECTION 5: Firefighting

5.1. Extinguishing media
Suitable extinguishing media: sand, extinguishing foams, carbon dioxide, water - dispersed stream. Apply extinguishing methods adjusted to adjacent area.
Inappropriate extinguishing media: Heavy water stream.

5.2. Special hazards arising from the substance or mixture
Hydrogen emitted in contact with light metals can pose a hazard.

5.3. Advice for firefighters
Containers in a fire area must be cooled down with a water spray. If this is possible remove the containers from the hazard zone. In case of fire in an enclosed area use protective clothing and compressed air breathing apparatus. Do not enable penetration of the ground waters and the sewage system.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
For persons, who do not belong to the personnel providing aid: Avoid direct contact with the substance. Do not inhale vapors. When choosing an escape route, consider the direction of movement of vapors. In confined spaces provide access to the fresh air.
For persons providing aid: Ensure adequate ventilation, use individual protective equipment - protective clothing, protective gloves, respiratory tract and eye protection.

6.2. Environment protection measures
Prevent from spreading and penetration of the sewage system and reservoirs; inform local authorities if it is impossible to assure safety.

6.3. Methods and materials for preventing the spread of contamination and for disposal Prevent the spread of contamination and dispose waste by collection, using absorbing material, into properly labeled plastic containers for disposal in accordance with applicable regulations. Rinse the contaminated surface with water. Neutralize the solution with approx. 10% hydrochloric acid, wash the raw material packaging thoroughly with water. The waste water, after it has been neutralized to pH7, can be directed to the sewage system.

6.4. References to other sections
Waste handling - see section 13 of the sheet.
Personal protective equipment - section 8 of the sheet.

SECTION 7: Handling and storage

7.1. Precautions regarding safe handling
Provide adequate ventilation. Avoid contact with eyes. Avoid contact with the skin. Do not inhale vapors. Work in accordance with safety and hygiene rules: do not eat or drink, do not smoke in the workplace, wash hands after use, remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including information on any incompatibilities Store in a cool, dry, well-ventilated area (general room ventilation and exhaust ventilation) in a properly labeled closed container. The floor of warehouses suitable for storing corrosive liquids should be easily washable and lye-resistant, with internal plumbing and a separate sewage system. Avoid direct sunlights and sources of heat. Avoid hot areas and open flames. Do not store in aluminum, zinc or tin containers. Tanks should be equipped with a heating or temperature support system at such a level as to prevent the product from becoming solid. Store away from substances enumerated in section 10 of the sheet.

7.3. Specific end use(s)
Uses according to section 1.2 - no additional recommendations
See attached exposure scenario.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Exposure standards for occupational hazards in accordance with Regulation of the Minister of Family, Labor and Social Policy dated 12 June 2018 on the highest permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws item 1286 as amended).

Ingredients for which exposure limits are binding:

Name and CAS number of the chemical (substance)	Maximum allowable concentration (in mg/m^3) depending on exposure time during the work shift			Number of fibers (in cm)^3	Remarks: Notation of the substance: "skin"
	NDS	**NDSCh**	**NDSP**		
Sodium hydroxide [CAS: 1310-73-2]	0.5	1	-	-	-

8.2. Exposure controls
See Appendix to the Material Safety Data Sheet: exposure scenarios for identified uses.

Appropriate technical control measures: it is necessary to use general ventilation in the room.
Personal protective equipment - individual protective equipment:

Eyes / face protection:
Use protective goggles or a face shield (according to standard EN 166). Equip the work area with eye washers.
Skin protection:
Hands protection:
Use protective gloves resistant to chemicals, acc. to EN-PN 374:2005.

Material of the gloves:
Selection of adjusted gloves depends on the material but also on a brand and quality assured by a manufacturer. Resistance of the material the gloves are made from may be determined after tests. Accurate gloves destroying time must be determined by a manufacturer.
Other:
Use protective work clothing (according to EN 344) - wash regularly.
Airways protection:
Avoid inhalation of product vapors. Under the conditions exceeding the NDS (the highest permissible concentration) of the components in the working environment, use individual respiratory protection equipment - a mask or a half-mask complete with a vapor filter (AP type) or universal vapor absorber (class 2) according to EN 141.
Thermal hazards:
Not applicable.
Environment exposure control
Do not enable spreading in the environment and penetration of the sewage and water courses.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a)	State:	Liquid
b)	Color	Colorless
c)	Smell	Odorless
d)	Melting / solidification temperature *(not applicable to gases)*	15^{o}C
e)	Preliminary boiling temperature and range of boiling temperatures:	No data
f)	Flammability of materials *(applies to gases, liquids, solids)*	The substance is not flammable
g)	Lower and upper explosive limits *(not applicable to solids)*	Not applicable - does not pose an explosion hazard
h)	Flash point *(not applicable to gases, aerosols and solids)*	Not applicable - the substance is not flammable
i)	Self-ignition temperature *(applies to gases and liquids only)*	It is not self-inflammatory
j)	Decomposition temperature *(applies only to self-reactive substances and mixtures, organic peroxides and other substances and mixtures that can decompose)*	Not applicable
k)	pH *(not applicable to gases)*	12,4 (r-r 50g/l)
l)	Kinematic viscosity *(applies to liquids only)*	No data
m)	Solubility	In water 100g/100cm^3 at 20°C
n)	Partition coefficient n-octanol/water (	Not applicable - inorganic substance.

	log coefficient value)	
o)	Vapor pressure	No data
p)	Density or relative density *(applies to liquids and solids only)*	1,52 – 1,55g/cm^3
q)	Relative vapor density *(applies to gases and liquids only)*	No data
r)	Particle characteristics *(applies to solids only)*	Not applicable

9.2. Other information
No

SECTION 10: Stability and reactivity

10.1. Reactivity
Reacts violently with acids to form salts (heat is released). Reacts with ammonium salts. Strongly corrosive to light metals (tin, zinc, aluminum, brass) - possibility of hydrogen formation; risk of explosion.
10.2. Chemical stability
Product unstable under normal conditions - absorbing carbon dioxide from the air may become turbid from precipitating sodium carbonate.
10.3. Hazardous reactions
It reacts violently with acids (reaction with heat release); during reactions with base metals (except the lead) hydrogen is released, which forms explosive mixtures with the air.
10.4. Conditions to be avoided
Avoid elevated temperatures, direct sunlight, hot surfaces and open flames.
10.5. Incompatible materials
Light metals, acids, nitriles, ammonium compounds, cyanides, flammable organics, phenols and oxidizing substances.
10.6. Hazardous products of decomposition
During reactions with metals, hydrogen is released.

SECTION 11: Toxicological Information

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

a)	Acute toxicity	On the basis of the available data the criteria of classification are not satisfied
b)	Caustic / skin irritation	**It causes serious burns of the skin**
c)	Serious damage to eyes/eye irritation:	It causes serious eye damage.
d)	Skin / airways sensitizing:	On the basis of the available data the criteria of classification are not satisfied
e)	Mutagenic for reproductive cells:	On the basis of the available data the criteria of classification are not satisfied
f)	Carcinogenicity:	On the basis of the available data the criteria of classification are not satisfied

g)	Reproductive toxicity	On the basis of the available data the criteria of classification are not satisfied
h)	Specific target organ toxicity - single exposure	On the basis of the available data the criteria of classification are not satisfied
i)	Specific target organ toxicity - repeated	On the basis of the available data the criteria of classification are not satisfied
j)	Hazards arising from aspiration	On the basis of the available data the criteria of classification are not satisfied

Toxicological data:
LDL0 (rabbit, oral) - 500mg/kg (converted to 100% NaOH) LD50
(intraperitoneal, mouse): 40 mg/kg
LDL0 (oral, rat): 250 mg/kg

11.2. Information on other hazards
Information on exposure hazards:
Skin contact: chemical burns, hard-to-heal wounds.
Eye contact: chemical burns - risk of permanent eye damage; 1-2% solution damages the cornea and can cause corneal opacity and conjunctival congestion within 1-10min.
Respiratory system: chemical irritation of the mucous membranes of the nose, throat and distal segments of the respiratory system, Gastrointestinal tract: chemical burns of the mouth, throat, diffuse necrosis of the gastrointestinal tract with risk of perforation.
Delayed direct and chronic effects of short-term and long-term exposure:
No data
Effects of interaction:
No data

SECTION 12: Ecological information

12.1. Toxicity
The substance is not classified as hazardous to the environment, however, lowering the pH has a very adverse effect on aquatic organisms. Do not allow the product to enter drains or ground waters, sewage system and watercourses.
Acute toxicity to fish at pH 3.7 Water
hazard class 1
Lethal concentration for fish 20mg/l Lethal
concentration for carp 180 mg/24h At pH
11.0-11.5 - immediate death of all fish species
10.5-11.5 - immediate death of salmonids, death of tench, carp, pike, carp after some time 10.8 - death of carp and tench
10.7 - pike dies
10.4 - roach dies
10.2 - crayfish dies
9.2 - stream and rainbow trout, perch, ruffe die.
12.2. Persistence and decomposition
Easily decomposed in water and air. Converts to carbonates.
12.3. Bio-accumulation
Evaluation index for acute toxicity to fish (FRG) 3.7
12.4. Mobility in a soil
The product readily converts to sodium carbonate causing limited dissemination to all elements of the environment.
12.5. Results of assessment of the PBT and the vPvB properties
It does not meet the PBT and vPvB criteria.

12.6. Endocrine disrupting properties
A substance that does not disrupt the endocrine system.
12.7. Other harmful effects
No data

SECTION 13: Wastes disposal

13.1. Methods of wastes utilization
Treat waste as hazardous. Disposal of waste and disposable packaging should be handled by specialized companies. Store the residues in the original containers. Dispose acc. to regulations in force.
Empty, cleaned packaging should be disposed of (including recycling) in accordance with applicable regulations.

Determine waste codes at the place of production in accordance with the Ordinance of the Minister of Climate dated 2 January 2020 on the waste catalog (Journal of Laws, item 10):

Community regulations:
Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

SECTION 14: Transport information

14.1. UN number or ID number
ADR/RID/IMDG/IATA: UN 1824

14.2. Correct UN transport name
ADR/RID: SODIUM HYDROXIDE IN SOLUTION IMDG:
SODIUM HYDROXIDE SOLUTION
IATA: Sodium hydroxide solution

14.3. Transport hazard class
ADR/RID/IMDG/IATA: 8
14.4. Packages group
ADR/RID/IMDG/IATA: II

14.5. Hazards for the environment
ADR/RID/IMDG/IATA: no

14.6. Special precautions for users
transport always in closed containers that are upright, labeled and secured.

14.7. Sea transport in bulk according to IMO instruments
No available data.

SECTION 15: Regulatory information

15.1. Specific legal regulations regarding the safety, the health and the environment protection for a substance or a mixture.

1. Regulation (EC) No. 1907/2006 dated 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), as amended.
2. Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

3. Regulation (EC) No. 1272/2008 of the European Parliament and of the Council dated 16 December 2008 (CLP) as amended.
4. Law dated 25 February 2011 on chemical substances and their mixtures (i.e. Journal of Laws 2019, item 1225).
5. Law dated 28 May 2020 on amendments to the Law on chemical substances and their mixtures and some other laws (Journal of Laws 2020, item 1337).
6. Law of 14 December 2012 on waste (i.e. Journal of Laws 2019, item 701). (Journal of Laws, No. 2019, item 701).
7. Law dated 13 June 2013 on package and waste management (i.e. Journal of Laws of Laws 2019, item 542).
8. Regulation of the Minister of Climate of 2 January 2020 on the waste catalog (Journal of Laws 2020, item 10).
9. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
10. Announcement of the Speaker of the Sejm of the Republic of Poland dated 20 December 2019 on the announcement of the consolidated text of the Law on Transportation of Hazardous Goods (Journal of Laws 2020, item 154).
11. ADR Agreement 2019 - Government Statement of 18 February 2019 on the entry into force of the amendments to Annexes A and B to the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), done at Geneva on 30 September 1957 (Journal Laws, item 769).
12. Ordinance of the Minister of Labor and Social Policy dated 12 June 2018 on permissible concentrations and strengths of compounds / substances harmful for health in the work environment (Journal of Laws, item 1286 as amended).
13. Ordinance of the Minister of Health dated 30 December 2004 on safety and hygiene of work related to existence of chemical agents at the work environment (i.e. (Journal of (Laws, No. 2016, item 1488).
14. Ordinance of the Minister of Health dated 9 December 2003 on substances which pose serious hazard for the environment (Journal of Laws No. 217, item 2172).

15.2. Assessment of the chemical safety

A chemical safety assessment was conducted for the substance.

Appendix XIV to the Regulation REACH – List of substances subject of the permit procedure: not applicable

SVHC - Substance of very high concern waiting for permit: Not applicable

Appendix XVII to the Regulation REACH – Restrictions concerning production, entering into the market and application of some of hazardous substances: not applicable

SECTION 16: Other Information

H statements:

H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
H315 - Causes skin irritation
H319 - Causes serious eye irritation

Description of applied abbreviations, acronyms and symbols:

Met. Corr. 1 - may cause corrosion of metals cat.1
Skin Corr. 1A - Caustic for skin 1A.
Skin Corr. 1B – Caustic for skin
Skin Irrit. 2 – skin irritating, cat. 2
Eye Irrit. 2- Eye irritation cat. 2
NDS – The Highest Permissible Concentration
NDSP – The Highest Upper Limit Concentration
NDSCh – The Highest Temporary Concentration
LDLo - the lowest lethal dose, statistically determined the size of a single dose of a substance,
LD50 - (*lethal dose*) - medial lethal dose, the statistically determined size of a single dose of a substance, after administration of which 50% of exposed test organisms can be expected to die.
vPvB - very persistent and very bio-accumulative substance
PBT - persistent, bioaccumulative and toxic substances
ADR – European agreement on the road transport of hazardous goods.
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail

IMDG – International Maritime Dangerous Goods Code
IATA – Regulation on the transport of dangerous goods issued by the International Air Transport Association

Changes to the previous version:

Section:	**Description:**
Section 2	Change of an entry in accordance with Reg. 2020/878
Section 9	Change of an entry in accordance with Reg. 2020/878
Section 11	Change of an entry in accordance with Reg. 2020/878
Section 12	Change of an entry in accordance with Reg. 2020/878
Section 14	Change of an entry in accordance with Reg. 2020/878
Section 15	Regulatory change

Trainings:
Before commence of work with the product, an employee must take part in an obligatory OHS training since chemical agents are involved. Perform, document and familiarize employees with the results of risk assessment in the workplace with reference to the presence of chemical agents.

RESOURCES
Annex to Regulation (EU) 2020/878 dated 18 June 2020. Legal regulations referred to in section 15 of the MSDS.
Information of the Office for Chemical Substances.

Information contained in the MSDS concern exclusively the product named in the title. The data contained in the data sheet should be considered only as an aid to the safe use of the product: **Sodium hydroxide r-r 50%** Since conditions of storage and transport are beyond our control, we cannot give legal guarantees. Each time follow statutory regulations as well as regulations stipulated by potential third parties. The MSDS does not comprise an assessment of hazard at job. The product should not be used for purposes other than those laid down in the Section 1 without prior consultation with **TOMCHEM F.H.U.**

Developed at SPIN-DORADZTWO www.spin-doradztwo.pl for **TOMCHEM F.H.U.**

EXPOSURE SCENARIO

SN1

1. Title	Production of substances in liquid form
Application sector [SU]:	SU3 Industrial uses: uses of substances as they are or in preparations * in industrial facilities SU8 Bulk, large-scale production of chemicals (including petroleum products)
Process categories [PROC]:	PROC1 Use in closed processes, no possibility of exposure PROC2 Use in closed batch processes with occasional, controlled exposure PROC3 Use in closed batch processes (synthesis or formulation) PROC4 Use in batch and other processes (synthesis) where the possibility of exposure arises. PROC8a Transfer of a substance or a preparation (loading/unloading) to/from vessels/large containers within areas not intended for this goal PROC8b Transfer of substances or preparations (loading/unloading) to/from vessels/large containers in rooms not intended for this goal PROC9 Transfer of substances or preparations to small containers (dedicated filling line with weighing)
Category of product obtained by formulation [PC].	Not applicable
Category of the product [AC]	Not applicable
Environmental Release Category [ERC]:	ERC1 Production of the substance
This exposure scenario for sodium hydroxide covers the following uses / processes / activities: production of the substance in its own form	
2. Conditions of use of the substance causing exposure - related exposure scenarios	
Goal of this Exposure Scenario (ES) is to provide, by the manufacturer of the substance, the necessary minimum information regarding operational conditions and risk control measures for the safe use of the substance or its mixture to workers exposed to the substance in the course of its production process. The set of operational conditions and risk control measures relating to a worker's activities associated with use of a substance is called a related scenario. Format of this Scenario follows the ECHA requirements set forth in Part D of the CSA/CSR Guidance issued in May 2010. Risk Assessment has been carried out in EU countries based on the existing Council Regulation 793/93 on this matter. The relevant Risk Assessment Report was completed in 2007 and is available at the following address: http://ecb.jrc.ec.europa.eu/DOCUMENTS/Existing Chemicals/RISK_ASSESSMENT/REPORT/sodiumhydroxidereport416.pdf The following values were used to calculate sample worker exposure: DNEL inhalation chronic local 1mg/m3	
2.1 Related scenario (1) - environmental exposure control	
Characteristics of the substance	Liquid, at a concentration of 2% to 50% NaOH
Quantities used	On a continuous basis
Frequency and duration of use/exposure	The daily and annual amount of emissions is not taken into account when assessing environmental exposure.

Other operational conditions of exposure for the environment	No specific guidelines in this regard
Conditions and technical measures at the process level to prevent the release	Appropriate measures to control the risk of environmental exposure to avoid sodium hydroxide solution entering municipal wastewater or surface water resulting in significant pH value changes: Regular check of the pH value when entering into the open water is required. In general, discharges should be carried out so as to minimize pH changes in standing surface waters. In general, most aquatic organisms can tolerate a pH in the range of 6-9. This was also mentioned in the results of standard tests, performed on behalf of the OECD, in the relation to aquatic organisms.
Organizational measures to limit/prevent release from the site of use	A plant should have a plan for releases to ensure adequate safeguards to minimize the impact of occasional releases.
Conditions and measures related to the discharge of wastewater to their municipal treatment plant	The pH value of wastewater discharged into the of a municipal wastewater treatment plant should be between 6 and 9.
Conditions and measures related to external treatment or recovery of waste for disposal.	There is no solid sodium hydroxide waste. Liquid sodium hydroxide waste should be reused or discharged into industrial wastewater and neutralized if it is necessary.
2.2 Control of worker exposure	
Characteristics of the product	Liquid, concentration up to 50% NaOH
Quantities used	From milliliters (sampling) to over 1000T/year
Frequency and duration of use/exposure	200 days a year (up to 8h/day)
Other operational conditions affecting worker exposure	
Employees are properly trained and informed about the conditions for safe use of the substance and are familiar with use of personal protective equipment under normal process conditions and in the event of an accidental release of the substance in the work environment. The employer is obliged to ensure availability of the required personal protective equipment. There are implemented employee health monitoring programs. Periodic trainings.	
Conditions and measures in terms of the personal protection and OHS	
Due to the corrosive effect of the substance, gloves, goggles and appropriate resistant clothing must always be used.	
	Risk control measures
Technical solutions	• Use closed and automated production systems, • Use special protective screens to minimize • direct exposure of the worker to vapors of open • tank/container, • in order to fill / empty tanks use pumps with • automatic suction systems, • make sure that the container, which is to be filled, is not contaminated with

	chemical substances/mixtures which may cause formation of vapors, • store in warm dry places • exhaust or general ventilation is not required, but may be used, as a form of good practices.
Respiratory track protection	In case of aerosol formation (e.g. spraying): use respiratory protection with an appropriate filter (P2)
Hands protection	• material: butyl rubber, PVC, polychloroprene with natural latex insert, material thickness: 0.5 mm, breakthrough time: > 480 min or • material: nitrile rubber, fluorocarbon rubber, material thickness: 0.35 - 0.4 mm, breakthrough time: 480 min
Eye protection	If there is a possibility of splashes use chemical-resistant goggles that fit snugly on the face, or a protective shield on the face
Skin and body protection	If there is a possibility of splashes use appropriate protective clothing, apron, shields and covers, rubber or plastic shoes
General OHS principles	Wash hands, forearms and face with water after operating with chemical products before eating, smoking, using the restroom and at the end of working time. Appropriate methods should be applied to remove potential soiling of clothing. Soiled clothing should be washed before reuse.

3. Estimation of exposure and relation to its source

3.1 Health

Due to the fact that the substance has a local corrosive effect on the skin, no exposure assessment was made for the dermal route. No systemic effects were found as sodium hydroxide is not present in the human body and the presence of the sodium in the bloodstream will not cause changes in blood pH. Exposure estimation was limited to chronic local inhalation effects. The critical concentration for inhalation exposure in the course of the manufacturing process was 0.33mg/m3 (typical concentration 0.14mg/m3) which, compared to a DNEL inhalation chronic local of 1 mg/m3 suggests that the risk, even at critical concentrations, of the substance is controlled.

3.2 Environment

Exposure to the following environmental elements is not expected to occur:

- for sludge in wastewater treatment plants
- for soil
- for groundwater
- for air

Exposure assessment was carried out only for the aquatic environment, and according to the results, the substance does not pose a threat to the environment and the only effect is a local change in pH.
< There is no bioaccumulation phenomenon.

4. Guidance to the downstream user on assessing whether he/she is working in accordance with the principles set out in this exposure scenario

4.1. Health

Exposure to workers was calculated acc. to the EASE and ECETOC TRA model

4.2 Environment

No special recommendations.

5.0 Additional advice on good industrial practices, regardless of knowledge derived from the REACH and Chemical Safety Assessment (CSA) for the substance or its mixtures.
Based on the principles of good industrial practices developed for the chemical industry, the following suggestions should be recommended and communicated via the Safety Data Sheet : - follow the procedures - minimize the number of crew subject to exposure - reduce emission processes - effective removal of pollution - efficient and effective general ventilation - minimize manual steps in operations - avoiding contact with contaminated tools and objects - regular cleaning of equipment and cleaning of the workplace - management/local supervision to verify that risk control measures are properly applied and operational conditions are observed - crew training in scope of good industrial practices - good level of health and safety among the workforce