SODIUM HYDROXIDE (NaOH) – REACH

Communication on uses and exposure scenarios

Based on the REACH Regulation a chemical safety assessment is needed for the substance sodium hydroxide. To enable a chemical safety assessment the uses of sodium hydroxide have to be evaluated and exposure scenarios have to be developed.

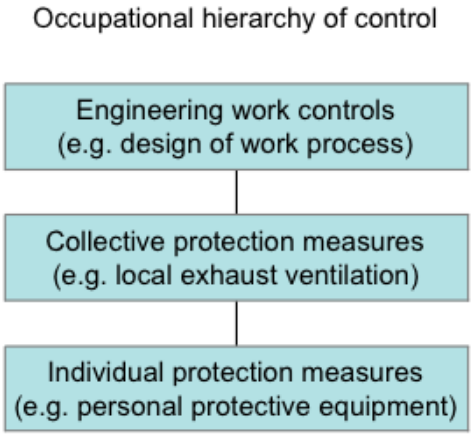
Hazards of sodium hydroxide

Sodium hydroxide is labeled as corrosive at concentrations of 2 % or higher. The concentration of the substance, as it is placed on the market by the manufacturers, has a much higher concentration than 2 % and therefore the commercialized substance is corrosive (R35 Causes severe burns). The most common product is a liquid, which has a concentration of 50 % sodium hydroxide in water.

Sodium hydroxide is an inorganic substance with a negligible vapour pressure. Exposure through inhalation is therefore normally not an issue. Only when aerosols (solid or liquid) are formed inhalation of sodium hydroxide could occur.

Operational conditions and risk management measures

Because sodium hydroxide is corrosive, the risk management measures for human health should focus on the prevention of direct contact with the substance. For this reason automated and closed systems should preferably be used for industrial and professional uses of sodium hydroxide. If aerosol formation cannot be controlled adequately by engineering control and/or local exhaust ventilation, respiratory protection is needed. Due to the corrosive properties appropriate skin and eye protection is required.



For environmental emissions to the aquatic compartment it is important to assure that the effluent is neutralized within an acceptable range for local conditions before discharge to the environment. A significant pH increase of the aquatic environment due to an emission of sodium hydroxide should be prevented.

Exposure scenarios

Because sodium hydroxide is a corrosive substance with a very low vapour pressure, the operational conditions and risk management measures are similar for many different uses of sodium hydroxide. For this reason the uses are grouped together for exposure assessment purposes. Only a limited number of generic exposure scenarios have been developed, which are intended to cover all uses which can be considered safe. Please find hereafter the list of exposure scenarios:

- manufacturing of liquid NaOH,
- manufacturing of solid NaOH,
- industrial and professional use and
- consumer use.

These four exposure scenarios of sodium hydroxide cover a wide range of processes or uses, which means that they can be considered “use and exposure categories” (see item 37 and 38 of Article 3 of the REACH Regulation). Please find below a table with the identified uses which are covered by these 4 exposure scenario’s.

Summary of exposure scenarios and identified uses based on use descriptor system (see ECHA guidance chapter R.12)

Exposure scenario	Sector of Use (SoU)	Preparation Category (PC)	Process category (PROC)	Environmental release category (ERC)	Article category (AC)
Manufacturing of liquid NaOH	SU 3, 8	Not applicable	PROC 1-4, 8, 9	ERC 1	Not applicable
Manufacturing of solid NaOH	SU 3, 8	Not applicable	PROC 1-4, 8, 9	ERC 1	Not applicable
Industrial and professional use	SU 1-20, 22-24	PC 0-40	PROC 1-18, 20-27	ERC 2-12	Not applicable
Consumer use	SU 21	PC 20, 35, 39	Not applicable	ERC 8-11	Not applicable

Sodium hydroxide has many different functions. Within industry it can be used for example to adjust the pH, to produce biodiesel from vegetable oils, to clean bottles (food industry), to de-ink water (pulp and paper industry), to dry air, to extract alumina (aluminum industry), to mercerize cotton (textile industry), to peel leather, to peel vegetables, to manufacture chemicals (intermediate use), to regenerate resins or to soften water. Consumer uses are for example paint stripping or to unblock sinks.

Communication between registrants (suppliers) and downstream users

Downstream users of sodium hydroxide are encouraged to verify if their sector of use, preparation category, process category and environmental release category of their uses are included in the table mentioned above. If not, please inform your supplier.

It would also be useful to check if the proposed risk reduction measures are appropriate. Downstream users who have additional specific information about operational conditions or risk reduction measures could contact their supplier. In this way the information can be included in the Chemical Safety Report and the extended Safety Data Sheet. It is the intention of the NaOH REACH consortium to include all uses, which can be considered safe.