

# Sodium Hydroxide Release Fact Sheet

*This 'ready to publish' fact sheet was designed to assist Chlorine Institute member companies with community relations after an incident. Copy this information onto company letterhead and add the appropriate company contacts under "More Information" at the end of the document.*

## What is Sodium Hydroxide?

Sodium hydroxide is also called caustic soda, lye, soda lye and sodium hydrate. It is available commercially in various solid forms, e.g., pellets, sticks, or chips, and in water solutions of various concentrations. The most common liquid concentration is 50% sodium hydroxide, 50% water.

Sodium hydroxide plays an important role in the manufacture of thousands of products we depend on every day such as soaps and detergents, rayon and other textile products, cellophane, paper and cleansers. Common household products usually containing sodium hydroxide include drain cleaners and oven cleaners.

Sodium hydroxide is one of the strongest bases, and is used in many industries to neutralize acids. One example of this use is in the petroleum refining industry, where sodium hydroxide is used to remove acid fumes to protect the environment.

## Warning Signs

Sodium hydroxide is odorless and is readily soluble in water. As a solid form, the pellets, sticks, chips or beads are white. In a liquid form, sodium hydroxide is a clear to a cloudy white solution. The solution looks thicker than water since it is viscous. Therefore, areas in contact with the product will be slippery. For this reason and also because the product is highly corrosive, care should be taken to prevent skin contact and/or any contact with the product without adequate personal protective equipment.

## Physical Properties of Sodium Hydroxide

Fifty percent sodium hydroxide solution is a colorless to slightly cloudy liquid at ambient temperatures with a freezing point of approximately 13°C (55.4°F). It has a density approximately 50 % greater than water. It is highly viscous with a viscosity of nearly 100 times greater than water at 20°C (68°F). The freezing point of more dilute solutions is lower than that of 50%, with the minimum freezing point being -27°C (-16.6°F) for 18% sodium hydroxide. As 18% sodium hydroxide is diluted, its freezing point increases, approaching that of water for very dilute solutions. Seventy-three percent sodium hydroxide has a freezing point of approximately 63°C (145.4°F). Anhydrous (100%) sodium hydroxide is a white translucent solid with a melting point of approximately 310°C (590°F).

## Effects of Exposure to Sodium Hydroxide

Sodium hydroxide is a strong irritant and has marked corrosive action on all body tissues regardless of the route of exposure (eye contact, skin contact, inhalation, and ingestion) or physical form (liquid or solid). Contact with the eyes may cause irritation or blindness. Contact with the skin may cause irritation or third-degree burns. The severity of injury increases with concentration, duration of exposure, and the speed of penetration into the tissue.

First aid is the immediate temporary treatment given to an exposed individual. Reassurance to the individual will help alleviate anxiety. Never give anything by mouth to an unconscious or convulsing person. Do not try to neutralize exposed areas.

Responders should take the necessary precautions to protect themselves from any exposure to sodium hydroxide while administering first aid and should move the victim from any contaminated area as quickly as possible.

	Possible Effects	What To Do
<b>Eyes</b>	Exposure to low concentrations of sodium hydroxide solid or solution may cause eye irritation. Concentrated solutions of sodium hydroxide may cause severe burns and permanent eye damage or, in extreme cases, blindness.	Immediately flush with tepid water for at least 20 minutes. Hold eyelids apart to ensure complete irrigation of eye tissue. Remove contact lenses if easily removable without additional trauma to the eye, otherwise sodium hydroxide trapped beneath the lens will continue to damage the eye. Seek immediate medical attention.
<b>Skin</b>	Exposure to small amounts of solid sodium hydroxide, or dilute sodium hydroxide solution may cause skin irritation. Direct contact with the solid or with concentrated solutions may cause thermal and chemical burns leading to deep-tissue injuries. Burns may not be immediately painful; onset of pain may be delayed minutes to hours.	Remove contaminated clothing and immediately flush affected area with tepid water for at least 20 minutes. Seek immediate medical attention.

<b>Inhalation</b>	Inhalation of sodium hydroxide mist or dust may damage the upper respiratory tract and lung tissue depending on severity of exposure. Effects range from mild irritation of mucous membranes to destruction of lung tissue and pulmonary edema. Symptoms of pulmonary edema may be delayed up to 48 hours after exposure.	Remove victim to fresh air. Administer artificial respiration only if breathing has ceased. Seek immediate medical attention.
<b>Ingestion</b>	Ingestion of sodium hydroxide may cause severe corrosive injury to the lips, tongue, oral mucosa, esophagus, and stomach. May be fatal.	Do not induce vomiting. Gently wipe or rinse the inside of the mouth with water. Sips of water may be given if person is fully conscious. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention.

## Spill Response

### **PROTECT PEOPLE:**

Evacuate area. Clear non-emergency personnel from area.

### **PROTECT THE ENVIRONMENT:**

Contain material to prevent contamination of soil, surface water or ground water.

### **CLEANUP:**

Dike spills immediately. Carefully flush small spills of caustic soda solution with water. Attempt to neutralize final traces of caustic soda with dilute acid, preferably acetic acid.

Notify the local, state and federal authorities as appropriate in the event of a spill

## Personnel Protective Equipment

### **EYE AND FACE PROTECTION**

Splash proof chemical goggles and a face shield are recommended when handling liquid sodium hydroxide. Dust proof goggles and a face shield are recommended when handling solid sodium hydroxide.

### **SKIN PROTECTION**

Chemical resistant gloves, boots, and protective suits should be worn when necessary to prevent skin contact. Natural rubber, nitrile and polyvinyl chloride are suitable materials.

### **RESPIRATORY PROTECTION**

A NIOSH-approved full-face respirator, with high-efficiency particulate filters, should be worn when dust or mist concentrations exceed the permissible exposure limit of  $2\text{mg}/\text{m}^3$ .

A positive-pressure, self-contained breathing apparatus (SCBA) is recommended in emergency response situations that involve exposure to unknown or immediately dangerous to life and health (IDLH) concentrations of sodium hydroxide.

### **ADDITIONAL PPE**

Thermally protective PPE may be necessary in addition to chemical resistant PPE.

## **Handling Reactive Chemicals**

When mixed with water, solid and liquid sodium hydroxide may generate enough heat to ignite combustible materials. Contact with organic materials and concentrated acids may cause violent reactions. Contact with nitromethane and other similar nitro compounds cause formation of shock-sensitive salts. Contact with metals such as aluminum, magnesium, tin, and zinc cause formation of flammable and explosive hydrogen gas.

## **More Information**

Local emergency phone number for immediate medical attention: 911  
Regional Poison Control Center phone number: 1-800-222-1222  
See the Material Safety Data Sheet (MSDS)

**The information provided in this Fact Sheet is not meant to be complete. For more information on first aid, see the Material Safety Data Sheet (MSDS).**