# STANDARD OPERATING PROCEDURES FOR HAZARDOUS AND PARTICULARLY HAZARDOUS CHEMICALS

For

## Sodium Hydroxide

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| 1. PROCEDURE /  PROCES | Sodium hydroxide is used in **Building, Room.** **Insert procedure here:** |
| 2. CHEMICAL NAME(S) and associated  PHYSICAL and  HEALTH HAZARDS | **Sodium hydroxide,** **CAS # 1310-73-2,** also known as caustic soda; lye; sodium hydrate* **Causes severe skin burns and eye damage. The amount of tissue damage depends on length of contact.**
* **May be absorbed through the skin.**
* **May be corrosive to metals.**
* **Inhaling sodium hydroxide can irritate the lungs. Higher exposures may cause a build-up of fluid in the lungs (pulmonary edema).**
* **Severe inhalation over-exposure can produce lung damage, choking, unconsciousness or death.**
* **The substance may be toxic to mucous membranes, upper respiratory tract, skin, eyes.**
* **Sodium hydroxide is mutagenic in some mammalian cells.**
* **Sodium Hydroxide in contact with water or moisture may generate enough heat to ignite combustibles.**

 Signal Word: **DANGER**Exposure Limits:**DOSH:** CEIL: 2 mg/m3**OSHA:** TWA: 2 mg/m3 **NIOSH:** CEIL: 2 mg/m3 **ACGIH:** CEIL: 2 mg/m3 \***Always refer to the Safety Data Sheet for the most detailed information**\* |
| 3. NAME OF TRAINER /  RESOURCE PERSON | **Principal Investigator Name, Building, Room, Phone Number****Secondary contact Name, Building, Room, Phone Number** |
| 1. LOCATION OF

 HEALTH & SAFETY  INFORMATION | The Safety Data Sheet (SDS) for sodium hydroxide is located in the Laboratory Safety Manual located in **Building, Room**.Labeling: In addition to the standard label that identifies contents, hazards, precautionary measures, and emergency contact information, containers should also be marked as a highly corrosive. |
| 5. PROTECTIVE  EQUIPMENT | Wear nitrile, butyl, neoprene, polyvinyl chloride, or Viton gloves, chemical splash goggles, and a fully buttoned lab coat while handling, dispensing, or during experimental use of sodium hydroxide. Use of a face shield in addition to chemical goggles is recommended. Always work within the confines of a properly functioning, certified laboratory chemical fume hood.  |
| 1. WASTE DISPOSAL

 PROCEDURES | **Waste sodium hydroxide** must be managed as Dangerous Waste if the solution has a pH of 9 or higher. Collect solution in a compatible container with a vented lid. The container should be stored away from incompatible materials such as oxidizing agents, reducing agents, organic material, metals, acids, alkalis, and moisture. A completed Dangerous Waste label should be attached when waste is first added to the container. When container is full or no longer being used complete a Chemical Collection Request Form, and deliver to the Waste Accumulation Area Operator at **Building, Room, Phone Number.**  If the solution has a pH between 5 and 9 it may be drained discharge.  |
| 7. DESIGNATED AREA  INFORMATION | Sodium hydroxide is stored and used in **Building, Room**. **Sodium hydroxide is used within a properly functioning, certified laboratory chemical fume hood.** The designated area(s) should be shown on the floor plan in Laboratories Chemical Hygiene Plan. |
| 8. DECONTAMINATION  PROCEDURES | Upon Accidental Exposure: In case of **eye contact**, flush eyes with copious amounts of water at an emergency eyewash station for at least 15 minutes and immediately seek medical attention. In case of **skin contact**, flush skin with copious amounts of water for 15 minutes and seek medical attention. For exposure over a large portion of the body, remove clothing and shoes and rinse gently but thoroughly in an emergency shower for at least 15 minutes. Seek medical attention immediately. In case of **inhalation**, move person to fresh air and immediately seek medical attention. **WARNING**: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive.In case of **ingestion**, immediately seek medical attention and follow instructions on SDS. Upon Accidental Release: **Large Spill:** If a large amount of sodium hydroxide is spilled outside the fume hood, immediately evacuate, secure the area and call 911**Small Spill:** If a small amount is spilled (it can be cleaned up in 10 minutes) and you are appropriately trained to clean up the spill, you may do so. Use appropriate PPE including nitrile, butyl, neoprene, polyvinyl chloride, or Viton gloves, chemical splash goggles, fully buttoned lab coat and a half mask or powered air purifying respirator equipped with organic vapor cartridges and a high efficiency dust/mist filter. (NOTE: You **must** medically cleared, fit tested and enrolled in WSU’s respiratory protection program to wear a respirator). If it is necessary to use a respirator and personnel are not cleared to wear a respirator and not trained to appropriately clean up the spill, the employee should immediately evacuate, secure area, and call 911 to contact EH&S. Absorb the spilled material, clean the area and place cleanup materials in appropriate containers, and dispose of as dangerous waste (see above WASTE DISPOSAL PROCEDURES). Prevent entry into sewers, basements or confined areas; dike if needed. Please do not use a neutralizer to clean up spill.As with all accidents, report any exposure as soon as possible to your Principal Investigator or Supervisor. Additional health and safety information on sodium hydroxide can be obtained by referring to the SDS or by calling the EH&S Office (335-3041). |
| 1. SPECIAL STORAGE

 AND HANDLING  PROCEDURES | Keep secured and store in a tightly closed dry container in a cool, dry, ventilated area away from sources of heat or ignition. Store segregated from incompatible chemicals (below). This material is hygroscopic (readily absorbs moisture).Never add water to this product.Sodium hydroxide in contact with water may generate enough heat to ignite adjacent combustible materials. Keep away from incompatibles such as oxidizing agents, reducing agents, organic material, metals, acids, alkalis, and moisture. When heated to decomposition it emits toxic fumes.**Special Remarks on Fire Hazards**:* Sodium hydroxide + zinc metal dust causes ignition of the latter. Under proper conditions of temperature, pressure and state of division, it can ignite or react violently with acetaldehyde, ally alcohol, allyl chloride, benzene-1,4-diol,chlorine trifluoride,1,2 dichlorethylene, nitroethane, nitromethane, nitroparaffins, nitropropane, cinnamaldehyde, 2,2-dichloro-3,3-dimethylbutane.
* Phosphorous boiled with NaOH yields mixed phosphines which may ignite spontanously in air.
* Sodium hydroxide and cinnamaldehyde + heat may cause ignition.
* Reaction with certain metals releases flammable and explosive hydrogen gas.

**Special Remarks on Explosion Hazards:*** Sodium hydroxide reacts to form explosive products with ammonia + silver nitrate.
* Benzene extract of allyl benzene sulfonate prepared from allyl alcohol, and benzene sulfonyl chloride in presence of aquesous sodium hydroxide, under vacuum distillation, residue darkened and exploded.
* Sodium Hydroxde + impure tetrahydrofuran, which can contain peroxides, can cause serious explosions.
* Dry mixtures of sodium hydroxide and sodium tetrahydroborate liberate hydrogen explosively at 230-270 deg. C.
* Sodium Hydroxide reacts with sodium salt of trichlorophenol + methyl alcohol + trichlorobenzene + heat to cause an explosion.
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**Certification of Hazard Assessment**

Is this document a certification of Hazard Assessment for the processes identified within? ***Yes No***

If yes, provide the name of the person certifying the Hazard Assessment and the date it was performed:

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Name Date

The location of the Hazard Assessment is indicated in the document preceding this form.

**Certificate of Employee Training**

Name of person providing training for employees working with this process:

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The following employees have been trained in when, where and how to use selected PPE, the maintenance, limitations and disposal of the PPE selected, and have demonstrated the correct use of the PPE selected on the reverse of this certification.

**Name**  **Date Trained**

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