

**STANDARD OPERATING PROCEDURE**

**Sodium Borohydride**

According to the Material Safety Data Sheet (MSDS) special precautions must be taken when working with the chemical described above. The following information includes the chemical characteristics of followed by recommendations for handling and any paperwork needed in order to use the chemical in the laboratory. This Standard Operating Procedure will be followed along with the requirements of the Chemical Hygiene Plan.

Classification (if applicable): Strong reducing agent, reacts to flammable hydrogen gas when it comes in contact with water, acid, or high temperatures.

Brief description of proposed chemical work: Sodium borohydride is used during protein/RNA crosslinking procedures in our lab.

***\*\*Attach additional pages as needed\*\****

**Brief Safety Overview:**

● The Principal Investigator is responsible for training employees using the material on site. The training should include a discussion of the known and potential hazards; an explanation of the relevant policies, techniques and procedures including the proper use of personal protective equipment, emergency/spill procedures and containment equipment (engineering controls).

● Limit access to authorized users.

● Minimize the possibility of inadvertent ingestion, inhalation and direct skin or eye contact with the substance.

● Chemical has been placed in the Chemical Inventory (EHS Assistant)

● Require annual training.

**Routes of Exposure**

Skin – Causes severe skin irritation and eye burns

Inhalation – hazardous, causes chemical burns to respiratory tract

Ingestion- harmful if swallowed, causes gastrointestinal tract burns

Injection- N/A

**Toxicological Effects**

Chronic Effects/ Precautionary Safety Measures: Prolonged inhalation can cause lung damage.

**Handling and Storage Instructions**

Example: (Preparation of the stock solutions): Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not allow water to get into the container because of violent reaction. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Do not allow contact with water. Keep from contact with moist air and steam. Note: An explosion can occur by spontaneous ignition of the gases released from a saturated solution of sodium borohydride in dimethylformamide at 17°C. (Hawley's Condensed Chemical Dictionary, 13th edition,1997.) For sampling and testing purposes, utilize polyethylene bottles. Do not store in glass containers, as pressure buildup could result in rupture and severe injury.

Storage**:** Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from water. Keep away from acids. Do not store in aluminum containers. Store protected from moisture. Sometimes packaged under dry nitrogen.

***Location – Engineering controls***

X Ventilation (example: Fume Hood, Canopy Hoods, etc): N/A

X Designated area (specify): stored in a dessicator in room 3047

N/A Bio-Safety Cabinet

***PPE required:***

X Skin/Body Protection (example: Lab Coat) wear laboratory coat

X Eye protection: wear safety goggles

N/A Face shield

N/A Respirator (example: N95):

X Hand protection (example: Nitrile gloves): wear gloves

**Exposure Response and First Aid Measures**

**Eyes:** In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid immediately.   
**Skin:** In case of contact, immediately wipe away excess material with a dry cloth while removing contaminated clothing and shoes. Under safety shower, wash affected areas thoroughly with large amounts of water, and soap if available, for at least 15 minutes.   
**Ingestion:** If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.   
**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Emergency Procedure for Chemical Spills and Accidental Releases**

Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Isolate area and deny entry. Provide ventilation. Do not expose spill to water. Do not get water inside containers. Use only non-sparking tools and equipment. Remove ignition sources since flammable hydrogen gas may be generated by reaction with water.

**Disposal Procedures**

Dispose of waste in labeled leak proof waste bottle, to be disposed of properly by EHS.

This Standard Operating Procedure must be placed in the Chemical Hygiene Plan and the MSDS must be accessible. Also, all laboratory personnel must be familiar with safe handling practices (i.e., training with documentation of training) when working with these chemicals. This must be incorporated into the comprehensive chemical hygiene plan of the laboratory. If you have any questions regarding a comprehensive mandatory laboratory chemical hygiene plan please contact your Representative at Environmental Health and Safety (292-1284).For any other questions or concerns, please contact:

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