

**Standard Operating Procedure for Using Sodium Azide
in the PI Name Lab (Bldg#, Room#)**

Print a copy and keep with your lab’s training documents.

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| Department |  |
| Principal Investigator (PI) |  |
| PI Phone Number |  |
| Lab Manager |  |
| Lab Manager Phone Number |  |
| Emergency Contact |  |
| Emergency Contact Phone Number |  |

1. **Purpose**

The purpose of this document is to provide the information necessary to safely use sodium azide in the PI Name Laboratory and to comply with the requirements of the *UNM Azide Safety Program* and the OSHA standard 29 CFR 1910 Subpart Z ([CAS #26628-22-8](https://www.osha.gov/chemicaldata/chemResult.html?recNo=331)).

1. **Hazard Identification
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The hazards of sodium azide are listed below:

* *Toxic* --

Potentially fatal if swallowed, inhaled or absorbed through skin or mucous membranes. Chronic exposure may cause damage to central nervous system, heart, kidneys, liver, and spleen. Ingestion or inhalation of sodium azide may cause dizziness, weakness, blurred vision, dyspnea (shortness of breath), hypotension (low blood pressure), slowed heart rate, and abdominal pain. Spasms, convulsions, and loss of consciousness may also occur. Dermal or eye exposure to sodium azide may result in pain and redness of exposed areas. Eye exposure may also lead to blurred vision. Sodium azide is similar in toxicity to cyanide (LD50 = 27 mg/kg for rats).

* *Reactive/Explosive* --

Sodium azide is an unstable, potentially explosive material that will decompose violently under heat, light and/or pressure. Forms explosive-sensitive materials with some metals such as lead, silver, mercury or copper. May form toxic hydrazoic acid fumes in fire. Containers may explode in fire. Avoid acids, benzoyl chloride and potassium hydroxide; bromine; carbon disulfide; copper; lead; nitric acid; barium carbonate; sulfuric acid; chromium (II) hypochlorite, dimethyl sulfate, water, dibromo malononitrile, lead, silver, copper and mercury.

1. **Training Requirements**

All UNM personnel who use sodium azide must be trained before using it. Trainings must include:

* This SOP (read and sign)
1. **Engineering & Administrative Controls**

Sodium azide must only be used within a properly functioning chemical fume hood that has a current annual certification. (Engineering Control).

All lab personnel who use sodium azide must be trained on the hazards, including being familiar with this SOP (Administrative Control).

The door to the PI Name Lab is posted with signage indicating the presence of and hazards associated with sodium azide (Administrative Control).

1. **Required Personal Protective Equipment (PPE)**
* *Hand Protection*: At a minimum, complete protection of the skin is essential. Nitrile gloves must be worn when handling sodium azide.
* *Eye Protection*: Safety glasses or splash goggles must be worn when handling sodium azide. A face shield is recommended if there is a potential for splashing.
* *Skin and Body Protection*: A lab coat must be worn when handling sodium azide.
* *Respiratory Protection*: Always open, pour, handle, and use sodium azide within a properly functioning fume hood. Additional respiratory protection is not required.
1. **Standard Operating Procedures for Handling Sodium Azide in the PI Name Here Lab:**
2. Put on proper PPE (glasses, gloves, lab coat).
3. Remove sodium azide container from storage and place in the fume hood.
4. Continue listing the steps of the procedure in which sodium azide is used in this lab (i.e. how to weigh material, quantity used, etc.).
5. Place the container of sodium azide back in its storage location.
6. After removing gloves, wash hands thoroughly.

Special Precautions for Using Sodium Azide

* 1. Sodium azide can react violently with several common laboratory organics such as: carbon disulfide, bromine, Bronstead acids, and heavy metals. *When attempting a new reaction, be relentless in your background research to determine the reactivity of sodium azide anions to all reaction components*.
	2. Sodium azide reacts with acids to form the explosively unstable hydrazoic acid - a highly toxic gas that can escape from solution and present a serious inhalation hazard.
	3. Sodium azide rapidly hydrolyzes in water to form hydrazoic acid.
	4. Never use chlorinated solvents as reaction media! Using dichloromethane or chloroform will result in the formation of di- and tri-azidomethane, respectively.
	5. The acute toxicity of sodium azide is high, comparable to that of sodium cyanide. Solutions of sodium azide can be absorbed through the skin.
	6. Violent decomposition of sodium azide occurs when heated to 275oC or greater.
	7. Sodium azide must not be allowed to come into contact with heavy metals or their salts, as it may react to form heavy metal azides, which are notoriously shock-sensitive explosives. For this reason, sodium azide must never be poured into drains, as the plumbing is likely comprised of one or more heavy metals.
	8. Do not use metal items such as spatulas to handle sodium azide.
	9. Do not store sodium azide containers on metal shelves.
	10. Store away from metals, acids, carbon disulfide, bromine, nitric acid, dimethyl sulfate and hydrazine.
1. **Spill Procedures**

For small/minor spills (<1L) and spills inside of a fume hood – use the materials in your lab’s spill kit to clean up a sodium azide spill. Minimum PPE for cleaning up an azide spill is safety glasses/goggles, gloves and lab coat. The spill clean-up materials must be double-bagged, tightly closed, labeled and picked up by EHS for disposal.

Large spills or spills outside of a fume hood should not be cleaned up by lab personnel. In the event of a large/major spill of azide, evacuate the area and call:

* UNM Police -- 911 or 505-277-2241, and
* Environmental Health & Safety (EHS) – 505-277-2753 during business hours, or
* EHS Duty Officer Pager (after hours) -- 505-951-0194 (enter your phone number after the message)
1. **First Aid Procedures**

In the event of a sodium azide exposure:

* Skin or eye contact - wash immediately in safety shower or eyewash for 15 minutes, then seek medical attention.
* If the exposure is severe, seek medical attention at the emergency room.
	+ If heading to UNMH, a non-injured person should contact the UNMH Charge Nurse in advance at 505-604-9349 and inform them of the situation.
* UNM employees should contact Employee Occupational Health Services (EOHS) at 505-272-8034.
* UNM students should contact Student Health Services at 505-277-7810.
* If the exposure occurs after hours, employees and students should seek medical treatment at an emergency room.
* The supervisor of the injured person and EHS must be notified as soon as possible after the exposure.
* A notice of Accident, Incident, or Spill form should be filled out on the EHS website (https://ehs.unm.edu/accident-incident-spill-reporting/index.html)
1. **Disposal Procedures**

Sodium azide waste should be collected in a suitable container (plastic) and properly labeled as soon as waste is added to the container. *Extra caution must be taken to make sure that azide waste does not come in contact with acids*. Acids will protonate any residual azide ion and form the highly-toxic hydrogen azide (with toxicity similar to that of hydrogen cyanide).

Sodium azide waste should be labeled as such:

**HAZARDOUS WASTE**

**Sodium azide (include quantity or concentration)**

**Toxic & Reactive**

Call EHS at 277-2753 to schedule a pickup of sodium azide waste and/or other chemical waste.

1. **Other Emergencies**
* **Fire or Medical Emergency -- 911 or 505-277-2241 (UNM Police)**
* **Life-Threatening Emergency, After Hours, Weekends and Holidays** – **911**
	+ **EHS After Hours Duty Officer Pager – 505-951-0194** (enter return phone # after the outgoing message)
* **Non-Life-Threatening Emergency** – Call EHS at 505-277-2753 for assistance and/or to report the incident.

**Principal Investigator SOP Approval**

By signing and dating here, the Principal Investigator (PI Name) certifies that this SOP for Sodium Azide is accurate and provides information sufficient to safely use formaldehyde in the PI Name Laboratory (Bldg#, Room#).

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Signature Printed Name/Title Date

I have read and understand the content of this SOP:

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| --- | --- | --- |
| **Name** | **Signature** | **Date** |
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