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| **Chemical Name: Sodium Azide**  **STANDARD OPERATING PROCEDURES**  **Type of SOP: Hazardous Class Hazardous Chemical Process**  According to the Safety Data Sheet (SDS) for Sodium Azide, special precautions must be taken when working with this chemical. This Standard Operating Procedure (SOP) briefly describes the use of equipment and supplies maintained in the lab/facility, procedures that must be followed, and the responsibilities of personnel when working in these labs/facilities. PI or the designee should **amend this SOP by entering text in the highlighted area in yellow to include specifics for your lab. Users shall** not conduct experiments, even pilot studies, which are not described in this approved SOP. It is essential that all personnel follow the appropriate procedures outlined in this SOP. **Please provide the SDS associated with this chemical to all lab personnel working with it.** | | |
| **PI Information** | | |
| Name: | |  |
| Dept.: | |  |
| PS ID: | |  |
| Date: | |  |
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| **1. PI Responsibilities (Please click the Check Box on every shaded section header.)** | | |
|  | The PI is responsible for training students/employees using the chemical. The training should include a discussion of the known and potential hazards and an explanation of the relevant policies, techniques and procedures including the proper use of personal protective equipment and containment equipment. | |
|  | Students/employees should be trained initially and then annually thereafter. Their knowledge, competence and practices should be evaluated and documented. | |
|  | Implement a safety program and include this information in the chemical hygiene plan. | |
|  | Limit access to authorized users. | |
|  | Minimize the possibility of direct skin or eye contact with the drug or inadvertent ingestion/inhalation. | |
|  | Transportation of the chemical within the facility should be performed using a sealed non-breakable container, as well as in secondary containment. | |
|  | Develop a Standard Operating Procedures (SOP) for delivery and storage of the chemical. The SOP should have a contingency plan for broken or leaking bottles. | |
|  | Properly label containers and any secondary containers of the chemical. | |
|  | Provide SDS via email to [ehs@uh.edu](mailto:ehs@uh.edu) upon request. | |

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| **2. Chemicals/Hazards** |
| * Chemical Name: Sodium Azide * CAS Number: 26628-22-8 * Form (physical state): Sodium Azide (NaN3) is a colorless crystalline solid and is readily soluble in water. Sodium azide is a common preservative of samples and stock solutions in laboratories and a useful reagent in synthetic work.   **Indicate why this is a PHS (there may be more than one category):**     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | High Acute Toxicity |  | Carcinogen |  | Reproductive toxin | |  | Air Reactive/Pyrophoric material |  | Water reactive |  | Explosive/unstable | |  | Other (specify) |  |  |  |  |   Click here to enter text.  **Indicate other hazards:**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | Flammable |  | Corrosive |  | Oxidizer | |  | Reactive |  | Temperature sensitive |  | Sensitizer | |  | Other (specify) |  |  |  |  |      * Circumstances of Use:   Click here to enter text.     * No SOP is required if a lab has ONLY pre-made kits where sodium azide is present as a preservative at 1% concentration or less. Labs should follow the instructions provided with these kits. * If sodium azide is used as a reactant instead of a preservative, this section must be customized describing the circumstances of use, along with the “Engineering Controls” and “Work Practice Controls” sections. * Be aware of these specific hazards: * Sodium azide is extremely toxic (LD50 oral [rat] 27mg/kg). Ingesting even a small amount can be lethal. * On contact with water or acid, sodium azide reacts to form a toxic gas (hydrazoic acid) with a pungent odor. However, the odor may not be strong enough to give sufficient warning. Store sodium azide away from acids. * OSHA does not have a Permissible Exposure Limit for sodium azide or hydrazoic acid. The American Conference of Governmental Industrial Hygienists recommends a ceiling limit of 0.29 mg/m3 for sodium azide and 0.11 ppm (ceiling) for hydrazoic acid. * When heated to its decomposition temperature of ~275°C, sodium azide may undergo violent decomposition. Store and use sodium azide away from heat. * Sodium azide reacts with heavy metals and their salts to form heavy metal azides, which are shock-sensitive explosives. Do not store on metal shelves or use metal items to handle sodium azide (i.e., spatulas). Contact with metal shelves, containers, utensils, and drainpipes can result in formation of heavy metal azides and the risk of explosion. * Sodium azide reacts violently with nitric acid, bromine, carbon disulfide, dimethylsulfate, and several heavy metals including copper and lead. * Facts About Sodium Azide, Centers for Disease Control and Prevention - <http://www.bt.cdc.gov/agent/sodiumazide/basics/facts.asp> |

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| **3. Engineering Controls** |
| * If hydrazoic acid or aerosols may be produced, sodium azide (and sodium azide solutions) must be handled in a chemical fume hood, exhausted biological safety cabinet with negative pressure ductwork, or other exhausted enclosure. Aerosols may be produced during any open handling of dry powder, and during open or pressurized manipulations of solutions. * Safety shower and eyewash station should be in immediate work area.   Please list the locations of the eye wash, safety shower and fume hood below.     |  |  | | --- | --- | | Type | Location (Building and Room Numbers) | | Fume Hood(s) |  | | Safety Shower (s) |  | | Eyewash Station(s) |  |   **More lab-specific information regarding storage and segregation to train users:**  Click here to enter text. |

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| **4. Personal Protective Equipment (PPE)** |
| * Lab coat, safety glasses and 2 pairs of standard nitrile gloves are required. Leave lab coats in the lab when your work is complete to prevent the spread of this or other chemicals outside of the lab. * Respiratory protection may be needed if aerosol hazard is present and work is conducted outside of a fume hood. If any procedure may pose an external hazard it should be eliminated or strictly isolated. If a potential exposure hazard cannot be eliminated, please contact the EHS Respiratory Protection Program administrator to discuss respiratory protection or to enroll in the program. Program enrollment includes medical evaluation, training, and fit testing for an appropriate respirator. For information see EHS Respiratory Protection Program or email ehs@uh.edu. |

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| **5. Work Practice Controls (Preparation and Handling)** |
| **Preparation**   * Consider alternate methods and use a safer alternative if possible. * Purchase the smallest containers at the lowest concentration practical. * If other specific written procedures are required for work with sodium azide, step-by-step procedures must be listed in *Section 10. Lab-specific Protocol/Procedure* in this SOP. * This SOP must be approved in advance by the Principal Investigator. * Provide hazardous chemical and specific SOP training by PI or designee to personnel working with sodium azide and any other personnel authorized or required to be in the laboratory or shared space during work with sodium azide. * Enter sodium azide into chemical inventory. Make sure the safety data sheet (SDS) in the process. * Ensure all containers of sodium azide are appropriately labeled according to UH Guidelines. * Confirm fume hood, emergency eyewash and/or shower are located within sodium azide working area and have a current certification date. * Ensure all staff are trained to use sodium azide safely and to manage emergencies.   **Handling**     * Sodium azide will be stored in designated areas only. Store and/or label sodium azide so it will only be handled by those trained to use it. Complete section 13 to designate the work area for sodium azide. * Keep containers close as much as possible. * If weighing dry powders, place balance in hood or * tare (pre-weigh) an empty container with a lid * go to hood, add powder to container, close lid * go to balance to weigh. * return to hood to make solution or manipulate powder. * Change gloves regularly (at least every two hours) and wash hands at the time of the glove change. * Do not use a HEPA vacuum for cleaning up sodium azide – sodium azide could react with metal inside the vacuum. * Once work with sodium azide is complete, wipe down the work area with a soap and water solution. (For spills of sodium azide, see Section 7) * All decontamination materials must be disposed of as hazardous waste. |

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| **6. Work Practice Controls (Storage and Transport)** |
| * Dry powders must be in sealed shatter-resistant containers during transportation. If the container is not shatter-resistant, use a secondary container. * Do not store in a metal container. * Keep away from heat and open flame. * Store in a cool, dry area. * Keep sodium azide powder and strong solutions away from benzoyl chloride + potassium hydroxide, bromine, carbon disulfide, chromyl chloride, copper, dibromalonitrile, dimethyl sulfate, lead, barium carbonate, acids (especially sulfuric and nitric), metals , metal salts, and water. |

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| **7. Spill and Accident Procedures**  **[Specific cleaning and waste disposal procedures must be determined.]** |
| Chemical spills must be cleaned up as soon as possible by properly protected and trained personnel. All other persons should leave the area. Spill response procedures must be developed based on the chemical and potential spill or release conditions. Clean up spills using contents of the laboratory spill kit. Do not attempt to clean up any spill if not trained or comfortable. If the spill is large or more concentrated or people have been exposed, evacuate the area, and call 911 on campus phone or 713-743-3333 for help. If a person is exposed follow EXPOSURE PROCEDURES in section 8 below.  **SPILL CLEANUP PROCEDURES**   1. Close hood sash, cordon off area. 2. For cleaning up a small spill of sodium azide, do not use metal instruments. Wipe up solutions with chemical absorbent pads. Cover solids with sand, sweep up, and place in a non-metal container. Once spill has been completely absorbed, wipe the area down at least two times using a soap and water solution. Contact EHS Environmental Programs for pick-up. 3. Spills of dry powders outside of a chemical fume hood or other enclosure should be referred to the EHS spill response team by calling EHS (during business hours (M-F/8-5) 713-743-5858, outside business hours call 911 on campus phone or 713-743-3333). Tell them that a sodium azide spill has occurred, and you need advice or assistance. Notify supervisor. 4. Personnel who handle the sodium azide waste must wear a fully buttoned lab coat with sleeves extended to wrists, face shield and safety goggles, nitrile gloves, long pants (or other clothing covering the entire leg), closed toed shoes. |

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| **8. Exposure Procedures in Case of Emergency** |
| 1. **Provide First Aid Immediately**  * For **inhalation** exposure, move out of contaminated area. Call 911 on campus phone or 713-743-3333. * For **eye or skin** exposure, call 911 on campus phone or 713-743-3333. Use the safety eyewash for at least 15 minutes or until medical treatment is given.  1. **Get Help**  * Call 911 on campus phone or 713-743-3333 or go to nearest Emergency Department to seek medical attention. Give details of exposure:   + Chemical name and concentration   + Amount of exposure   + Route of exposure (skin, eyes, respiratory)   + Time since exposure * Bring the SDS and SOP of sodium azide to the Emergency Department. * Notify your supervisor as soon as possible for assistance. * Secure area before leaving. Lock doors and indicate spill if needed.  1. **Report Incident to Environmental Health and Safety**  * Notify EHS immediately after providing first aid and/or getting help.   + During business hours (M-F/8-5) call 713-743-5858.   + After hours call 911 on campus phone or 713-743-3333 to be routed to EHS staff on call. * For all incidents and near misses, the involved person or supervisor should report to EHS at 713-743-5858. |

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| **9. Waste Disposal** |
| **WASTE COLLECTION AND DISPOSAL**   1. **Sodium azide waste**  * Sodium azide waste must be collected by EHS and properly disposed of. * Label with EHS Unwanted Material Waste label that states Sodium azide waste and the primary hazards (acute toxic), PI name. Unwanted Material Waste labels are available for on [EHS’s website](https://www.uh.edu/ehls/labs/labels/).  1. **Other Sodium azide waste**   Grossly contaminated gloves, absorbent pads, and all spill cleanup materials are hazardous waste.   * Accumulate waste in a plastic bag. * Label with EHS Unwanted Material Waste label as above.  1. **Disposal**   For chemical waste pickup: Complete Online [waste pickup request form](https://www.uh.edu/ehls/train/waste/index).   1. **Contacts**   For questions regarding chemical and waste chemical collection   * visit the EHS [Chemical Waste](https://www.uh.edu/ehls/waste/) website or, * email [ehs@uh.edu](mailto:ehs@uh.edu) or, * call 713-743-5858 |

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| **10. Lab-specific Protocol/Procedure** |
| This SOP must be customized for each lab using sodium azide. Use this section to describe or attach what is being done with sodium azide, including specific laboratory procedures and quantities used. |

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| Particularly Hazardous  Substance involved? | X YES: | | Blocks #11 to #13 are Mandatory |
| NO: | | Blocks #11 to #13 are Optional. |
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| **11. Approval Required** | | | |
| All staff working with sodium azide must be trained on this SOP prior to starting work. They must also be trained on the sodium azide SDS, and it must be readily available in the laboratory. All training must be documented and maintained by the PI or their designee. | | | |
| **12. Decontamination** | | | |
| All surfaces and non-disposable equipment will be decontaminated by copious amounts of soap and water. | | | |
| **13. Designated Area** | | | |
| * All work with Sodium Azide must be done in a designated laboratory, workspace, and fume hood. This work will be conducted in *[room #]*. | | | |
| PI’s Name: | | PISD: | |
| Department: | | Date: | |
| Signature: | |  | |

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| **[Laboratory Name]**  **Documentation of Training\***  **Standard Operating Procedure for Sodium Azide** | | | | | |
| *“I have read and understand this SOP. By signing below, I agree to fully adhere to its requirements.”* | | | | | |
| Last | First | PSID | Email | Signature | Date |
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\* This document, including the signature page with signatures by all involved personnel shall be maintained by the Principal Investigator or Designee, and be submitted to EHS either electronically via the ehs@uh.edu or hard copy upon request.

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| **Template Revision History** | | | |
| Version | Date Approved | Author | Revision Notes: |
| 1.0 | 04/09/2019 | EHLS Chemical Safety | New Template. |
| 1.1 | 06/10/2020 | EHS Chemical Safety | Name & logo change, and review. |
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