**Standard Operating Procedure for Hazardous Chemicals Use**

**Chemical name: Silane**

**Synonyms: Silicon tetrahydride; Silicane, Monosilane**

**CAS Number: 7803-62-5**

**Principal Investigator(s)       PI e-mail**

For chemical processes use only, return completed form sections 1-8 and Appendix to the Shemical Safety Committee (CSC) / US&A (sop-approval@uwm.edu)

IACUC Hazardous Chemical procedures return completed sections 1-9 and Appendix to the Animal Care program (acp@uwm.edu)

**Information on Chemical Purchasing Procedures are located on our website:** [**University Safety and Assurances Chemical Purchasing Procedure**](https://uwm.edu/safety-health/chemical-purchasing-process/)

1. **Submit a copy of the Safety Data Sheet(s) [SDS] with this form [ ]**

**The SDS is stored in the room in this location:**

1. **Chemical Concentration (as purchased)** **and Health and Physical Hazards:**

|  |  |
| --- | --- |
| **Concentration. As purchased** | 100% |
| **List all health and Physical Hazards** | **Found on the SDS section 2**Flammable gas, gas under pressure, pyrophoric gas, acute toxicity - inhalation, may displace oxygen and cause rapid suffocation, catches fire spontaneously if exposed to air. ontains gas under pressure. Extremely flammable gas. Runoff to sewer may create fire or explosion hazard. Catches fire spontaneously if exposed to air. May re-ignite itself after fire is extinguished. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion |
| **Known Incompatibilities** | Air, oxidizers |
| **Hazardous Decomposition Products** | Decomposition products may include the following materials:metal oxide/oxides |

1. **Authorized Use:**

|  |
| --- |
| [ ]  Principal Investigator [ ]  Laboratory Manager[ ]  Post Doc [ ]  Employees[ ]  Graduate Students [ ]  Technical Staff[ ]  Undergraduate Student [ ]  Adult Volunteer **[ ]** Other      |

1. **Storage Information:**

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| --- | --- | --- |
| **Chemical Storage Location** | Where will the chemical be used (building and room number) | **Storage** **Requirement** |
|      [x]  Area inspected regularly by US&A |       | [ ]  Refrigerator [ ]  Explosion Proof [ ]  Non-Explosion Proof[x] Flammable storage[ ] Corrosive storage[ ]  Shelf[x]  Locked cabinet[ ]  Secondary containment [x]  Closed, & labeled container [x] Other Must be stored in a gas cabinet or exhausted enclosure away from combustible materials, oxidizing substances, and ignition sources.Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials. Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep under an inert atmosphere. Keep container tightly closed and sealed until ready for use.  |

1. **Personal Protective Equipment [PPE]**

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| **Personal Protective Equipment Use** | **During Chemical Preparation** |
| Gloves\*Check integrity of gloves before each use. | **[x]  Type** (Specify): **Fire gloves for changing out cylinders and for any operations where accidental release is possible.** |
| Safety glasses (impact)  | **[x]**  |
| Safety goggles (splash) | **[x]**  |
| Lab Coat | **[x]**  |
| Apron | **[ ]**  |
| Dust Mask | Specify: N95 [ ]  N100 [ ]  Other      |
| Respirator | **[ ]**  |
| Hearing Protection: | **[ ]**  |
| Other: (i.e. double glove, barrier cream)  | **[x]** SpecifyFlame resistant lab coat. Wear a Nomex suit and hood whenever changing out silane cylinders.  |
| Describe how you will employ PPE, Engineering and Administrative controls |       |

1. **Engineering Controls**

|  |
| --- |
| [x]  Fume Hood [ ]  Laminar Flow Hood[ ]  Biosafety Cabinet [ ]  Snorkel/ Elephant Trunk[ ]  Glove Box [x]  Vented Gas Cabinet **[x]** Other (includes but is not limited to; pressure relief valves, intrinsically safe hot plates. Automatic shut -offs) **Burn Box, Use only with adequate ventilation. Engineering controls may be required to control the primary or secondary risks associated with this product. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.**  |

1. **Chemical Spill Procedure**

**Describe the spill cleanup protocol for the maximum volume of the chemical that would be in use at any one time. Refer to the SDS or guidance from University Safety and Assurances for procedures.** [**http://uwm.edu/safety-health/emergency/**](http://uwm.edu/safety-health/emergency/)

**Check all that apply and explain below:**

|  |
| --- |
| [x]  A spill kit or cleanup materials are present in each lab. Specify special materials required for the chemical cleanup. **Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof** **tools and explosion-proof equipment.**[x]  Personnel are trained on spill cleanup procedure of each chemical and emergency contacts. [x]  Proper personal protective equipment (PPE) available for spill cleanup. See #5 for PPE.[x]  Emergency eyewash and/or safety shower located nearby (within 10 seconds) and unobstructed. [x]  Personnel trained on eyewash/ shower location and operation[x]  Eyewash/ shower inspected annually and activated weekly to verify operability. Explain spill procedure: **Immediately notify others in the area of the release and evacuate the location where the release occurred. Notify your supervisor and call 9-911 from any campus phone (or 229-9911 from a cell phone). Report any exposure to your supervisor and first responders. Remain on-site (at a safe distance) to provide detailed information to first responders.** |

1. **Chemical Use Process**

**List each step of the procedure including the hazards associated with the step and controls that will be used to ensure safety. Be as specific as possible.**

**NOTE: Identify potential methods of human exposure to the chemicals during sample preparation. Also identify health hazard or routes(s) of entry into the body and explain how they affect the body.**

|  |  |  |
| --- | --- | --- |
| **Process Step** | **Hazards** | **Safety Controls** |
| *ex.) Transfer 5 ml of hydrofluoric acid to a plastic 50 ml beaker.* | *Corrosive, splash, fluoride ion**readily penetrates skin and bonds to calcium ions* | *Lab coat, splash goggles, face**shield, nitrile gloves- initial thin glove inside gauntlet glove* |
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1. **Animal Care and Use of Chemicals**

**Fill out this section *only* if you have an accompanying IACUC Procedure.**

1. **IACUC Procedure**

**Protocol Title:**       **Protocol Number(s):**

1. **Describe any Special Chemical and Carcass Disposal Requirement**

**Refer to the Waste Disposal Guidelines** [**http://uwm.edu/environmental-protection/disposal-guide/**](http://uwm.edu/environmental-protection/disposal-guide/) **or contact Environmental Protection (****hazwaste@uwm.edu****) for guidance. (Check all that apply)**

|  |  |
| --- | --- |
| **Chemical Disposal** | **Hazardous Chemical** |
| **Routine scheduled hazardous waste pickup****No special disposal requirements** | **[ ]**  |
| **Neutralization** | **[ ]**  |
| **Sanitary Sewer** | **[ ]**  |
| **Other disposal: (Specify):** | **[ ]**  |
|  |  |
| **Carcass** |  |
| **Animal facility freezer and disposal service** | **[ ]**  |
| **Scheduled Hazardous waste pickup** | **[ ]**  |
| **Other disposal (Specify):** | **[ ]**  |
|  |  |
| **Excretion-contaminated Materials****(hazardous)** |  |
| **Disinfection (Specify):** | **[ ]**  |
| **Autoclave** | **[ ]**  |
| **Sanitary Sewer** | **[ ]**  |
| **Other Decontamination Method (Specify)** | **[ ]**  |

**Explain disposal methods:**

1. **IACUC Training**

**List personnel and indicate the type of training the person has received related to the use of the chemical. Also specify the date the person was trained and by whom, as well as the experience that person has with the chemical or procedure.**

|  |  |  |
| --- | --- | --- |
| **Personnel\*\*** | **Type of Training** | **Experience**(Yrs., Type work) |
|       | [ ]  **CHP and Lab Safety**. Date trained      **Conducted By**      [ ]  Lab Specific CHP Date trained     **Conducted By**      [ ]  Spill clean-up Date trained     **Conducted By**      [ ]  **Hazardous Waste**. Date trained      **Conducted By**      [ ]  **Other(Specify)** Date trained     **Conducted By**       |        |
|       | [ ]  **CHP and Lab Safety**. Date trained      **Conducted By**      [ ]  Lab Specific CHP Date trained     **Conducted By**      [ ]  **Hazardous Waste**. Date trained      **Conducted By**      [ ]  **Other(Specify)** Date trained     **Conducted By**       |       |
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|       | [ ]  **CHP and Lab Safety**. Date trained      **Conducted By**      [ ]  Lab Specific CHP Date trained     **Conducted By**      [ ]  **Hazardous Waste**. Date trained      **Conducted By**      [ ]  **Other(Specify)** Date trained     **Conducted By**       |       |
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\*\*For approved IACUC procedures notify US&A to update this information when new individuals not listed above will be working with the hazardous chemicals

1. **IACUC SOP Reviewed and Approved (initialed) by:**

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| --- |
| **[ ]  Animal Care Program:****[ ]  Laboratory Safety:****[ ]  Environmental Protection:**  |

**University Safety & Assurances Web Guidance for**

**Hazardous Chemical SOPs**

**Use the following links to go to web page.**

* + Laboratory Safety <http://wwwdev.uwm.edu/safety-health/lab-safety/>
	+ Biosafety <http://wwwdev.uwm.edu/safety-health/biosafety/>
	+ Carcinogens <http://wwwdev.uwm.edu/safety-health/rtk-health-hazards/>
	+ Eyewash/ Safety Shower <http://wwwdev.uwm.edu/safety-health/laboratory-equipment/>
	+ Flammable Liquid Storage <http://wwwdev.uwm.edu/safety-health/chem-safety/>
	+ Fume Hood Procedures <http://wwwdev.uwm.edu/safety-health/laboratory-equipment/#General>
	+ Hazardous Communication <http://wwwdev.uwm.edu/safety-health/chemrtk/>
		- Material Safety Data Sheets (source) <http://uwm.edu/safety-health/chemrtk/>
	+ On-Line Safety Training <http://uwm.edu/safety-health/laboratory-training/>

Including:

* + - Laboratory Safety
		- Bloodborne Pathogens
		- Hazard Communication
		- Hazardous Waste Orientation
		- Mercury Spill Clean-up Procedures
	+ Personal Protective Equipment <http://uwm.edu/safety-health/general-ppe/>
	+ Sharps Disposal <http://uwm.edu/environmental-rotection/non-hazardous-waste/#a7>

**Appendix**

**Documentation of Training**

The individuals listed below have read and fully understand this Standard Operating Procedure. The individuals have received training from their Supervisor, Group Safety Representative (GSR) or Laboratory Manager/Graduate Student and are aware of all potential hazards and countermeasures related to this Standard Operating Procedure.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Signature | E-Mail | Date | Trainer Initials |
|  |  | **@uwm.edu** |  |  |
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