Standard Operating Procedure

**Arsenic Acid**

*This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and
3) SOP has been signed and dated by the PI and relevant lab personnel.*

 Print a copy and insert into your
*Laboratory Safety Manual* and *Chemical Hygiene Plan*.
Refer to instructions for assistance.

|  |  |
| --- | --- |
| **Department:** | Click here to enter text. |
| **Date SOP was written:** | Click here to enter a date. |
| **Date SOP was approved by PI/lab supervisor:** | Click here to enter a date. |
| **Principal Investigator:** | Click here to enter text. |
| **Internal Lab Safety Coordinator/Lab Manager:** | Click here to enter text. |
| **Lab Phone:** | Click here to enter text. |
| **Office Phone:** | Click here to enter text. |
| **Emergency Contact:** | Click here to enter text. |
| *(Name and Phone Number)* |
| **Location(s) covered by this SOP:** | Click here to enter text. |
| *(Building/Room Number)* |

**Type of SOP:** [ ]  Process [x] Hazardous Chemical [ ]  Hazardous Class

**Purpose**

Arsenic acid is an acute toxin. Applications of arsenic are limited because it is so toxic. It can be used as a wood preservative, finishing agent for glass and metal, biocide and pesticide

**Physical & Chemical Properties/Definition of Chemical Group**

CAS#: 7778-39-4

Class: **Acute toxin**

Molecular Formula: H3AsO4

Form (physical state): Liquid

Color: Colorless

Boiling point: N/A

**Potential Hazards/Toxicity**

Corrosive to eyes causing extreme pain. Causes burns. Causes burns to mouth, throat and stomach resulting in vomiting, diarrhea and collapse followed by death. Irritating to respiratory system and skin.

**Personal Protective Equipment (PPE)**

**Respirator Protection**

Respirators should be used only under any of the following circumstances:

* As a last line of defense (i.e., after engineering and administrative controls have been exhausted).
* When Permissible Exposure Limit (PEL) has exceeded or when there is a possibility that PEL will be exceeded.
* Regulations require the use of a respirator.
* An employer requires the use of a respirator.
* There is potential for harmful exposure due to an atmospheric contaminant (in the absence of PEL)
* As PPE in the event of a chemical spill clean-up process

Lab personnel intending to use/wear a respirator mask must be trained and fit-tested by ORS and should contact occhealt@uga.edu. This is a UGA requirement described in more detail in the [UGA Respiratory Protection Plan](https://esd.uga.edu/sites/default/files/respiratoryprotection.pdf) and supported by the [Office of Research Occupational Health and Safety Program](https://research.uga.edu/ohsp/).

**Hand Protection**

Wear either neoprene, butyl, PVC, nitrile or Viton gloves are recommended.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with arsenic acid.

Refer to glove selection chart from the links below:

<http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf>

OR

<http://www.allsafetyproducts.biz/page/74172>

OR

<http://www.showabestglove.com/site/default.aspx>

OR

<http://www.mapaglove.com/>

**Eye Protection**

ANSI approved safety goggles or glasses.

**Skin and Body Protection**

Complete suit protecting against arsenic acid. Wear Tyvek suit to avoid absolute exposure anywhere on the skin. Wear this over long pants and closed toed shoes.

**Hygiene Measures**

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse.

**Engineering Controls**

Arsenic acid can only be handled in a fume hood.

**First Aid Procedures**

**If inhaled**

Move to fresh air. If symptoms persist, call a physician.

**In case of skin contact**

Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water, also under the eyelids. Consult an eye specialist or physician.

**If swallowed**

Call the poison control center at 1-800-222-1222. Rinse mouth with plenty of water. Drink plenty of water or milk. Call a physician or Poison Control Centre immediately. See note below.

**Notes to Physician:** Prognosis is dependent on dose as well as the time span between ingestion of the arsenic acid and first aid treatment. Gastric lavage with warm milk and water followed by sodium sulphate (30g) is indicated. Keep patient warm and quiet, combat shock and dehydration. Apply artificial respiration, oxygen therapy, whole blood or fluids as needed. BAL (dimercaprol) antidote by intramuscular injection is recommended for Arsenic Acid or other pentavalent arsenic compounds. Dimercaprol Injection, BP, administered intra-muscularly, 2-3 mg/kg of body weight, at 4-Hour intervals in accordance with the individual needs of the patient. More recent medical treatment of arsenical poisoning uses exchange transfusion and dialysis.

**Special Handling and Storage Requirements**

**Precautions for safe handling**

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in fume hood that has the required ventilation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Discard contaminated shoes. Keep container tightly closed. Keep locked-up.

**Conditions for safe storage**

Keep container tightly closed. Keep locked-up. Store the chemical in secondary containment. Label the chemical and the secondary container as “Acute Toxin.”

**Spill and Accident Procedure**

**Chemical Spill Dial 911**

**24-7 On-Call Response to Research, Environment, Health or Safety Concerns Dial 2-5561 from a campus phone or 706-542-5561 from a non-campus line.**

**Spill** – Follow the procedures set out in the [UGA Chemical and Laboratory Safety Manual.](http://research.uga.edu/docs/units/safety/manuals/Chemical-Laboratory-Safety-Manual.pdf)

[If there are any chemical-specific protocols for responding to a spill, insert them here or mark “none”:]

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# **Medical Emergency Dial 911**

**Life Threatening Emergency, After Hours, Weekends And Holidays** – Dial **911** or the emergency phone numbers listed at the beginning of the UGA Chemical and Laboratory Safety Manual

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Non-Life Threatening Emergency** – Follow the instructions in the UGA Chemical and Laboratory Safety Manual.

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Decontamination/Waste Disposal Procedure**

**For general hazardous waste disposal procedures, see Appendix H of the UGA Chemical and Laboratory Safety Manual.**

**Chemical Specific Procedures: [to be inserted or marked as “none”]**

Wearing proper PPE, please decontaminate equipment and bench tops using soap and water. Please dispose of the used arsenic acid and disposables contaminated with arsenic acid as hazardous waste.

**Safety Data Sheet (SDS) Location**

UGA personnel can access Online SDS through a link in the upper left corner of the ESD home page (<https://esd.uga.edu>) and logging in by using their UGA email user name and password.

**Protocol/Procedure (Add lab specific Protocol/Procedure here)**

Click here to enter text.

**NOTE**

Any deviation from this SOP requires approval from PI.

**Documentation of Training** (signature of all users is required)

* Prior to conducting any work with Arsenic Acid, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.
* The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and access to the SDS provided by the manufacturer.
* The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last 12 months.

I have read and understand the content of this SOP:

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