Standard Operating Procedure

Arsenic Pentoxide

*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 ☒Hazardous Chemical ☐ Hazardous Class

**Purpose**

Arsenic pentoxide is a very toxic chemical that can be fatal if ingested or inhaled. If exposed, immediately contact a poison center or physician. It may cause skin and eye irritation. Prolonged exposure may cause cancer. Arsenic pentoxide is hygroscopic and relatively unstable. Inorganic arsenic is more toxic than organic arsenic because organic arsenic is excreted more rapidly than inorganic arsenic. Arsenic inhibits enzymes required for cellular respiration. Arsenic can also compete with phosphorus for incorporation into ATP, depleting cellular energy stores and leading to cell death.

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

CAS#: [1303-28-2](http://www.commonchemistry.org/ChemicalDetail.aspx?ref=1303-28-2)

Class: **Very toxic, carcinogen**

Molecular Formula: As2O5

Form (physical state): Solid

Color: White

Boiling point: Decomposes

**Potential Hazards/Toxicity**

May cause eye irritation or corneal injury. May cause skin irritation or sensitization. Ingestion may cause burning of the lips, throat constriction, swallowing difficulties, severe abdominal pain, severe nausea, projectile vomiting, and profuse diarrhea. Can cause respiratory tract irritation and possibly nasal perforation. May cause skin and lung cancers in humans. May cause liver damage. Can cause nervous system damage. Chronic ingestion is characterized by weakness, anorexia, gastrointestinal disturbances, impairment of cognitive function, peripheral neuropathy, and skin disorders. Chronic ingestion may cause fetal effects. **Inorganic arsenic-containing compounds have a permissible exposure limit (PEL) of 10 µg/m3.**

**Personal Protective Equipment (PPE)**

**Respirator Protection**

Use a full-face respirator with multi-purpose combination (US) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

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**

Handle with appropriate gloves. Nitrile gloves are recommended. Wash hands after use.

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

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, tight-fitting safety glasses/goggles.

**Skin and Body Protection**

Flame resistant lab coat, long pants, and closed-toe shoes.

**Hygiene Measures**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

**Engineering Controls**

Chemical fume hood. Adequate exhaust ventilation.

**First Aid Procedures**

**If inhaled**

Remove immediately to fresh air. If not breathing, give artificial respiration. If breathing is difficult, provide oxygen. Seek medical aid.

**In case of skin contact**

Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing. Seek medical aid.

**In case of eye contact**

Flush eyes with plenty of water for at least 15 minutes lifting lower and upper eyelids and removing contact lenses. Seek medical aid. Continue rinsing during transport to hospital.

**If swallowed**

Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical aid.

**Special Handling and Storage Requirements**

**Precautions for safe handling:** Wash thoroughly after handling. Wash contaminated clothing before reuse. Avoid contact with skin, eyes, and clothing. Avoid inhalation and ingestion. Use only with adequate ventilation or respiratory protection.

**Conditions for safe storage:** Store in poison room locked. Keep container tightly closed in a dry and well-ventilated area. Do not store with acids, alkalies, or halogens.

**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, carefully vacuum (equipped with HEPA filter) or sweep up any spills. Avoid dust formation. Dispose of the used chemical and contaminated disposables 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 pentoxide, 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.

**Principal Investigator SOP Approval**

Print name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Approval Date:

I have read and understand the content of this SOP:

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