Standard Operating Procedure

Hexaethyl Tetraphosphate (HETP)

*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**

Hexaethyl Tetraphosphate (HETP) is highly toxic. If not handled properly, this can pose a serious threat to the health and safety of laboratory personnel, emergency responders and chemical waste handlers. This SOP helps to understand how to properly store, handle and dispose of Hexaethyl Tetraphosphate. It is most often used as an insecticide. It also can be used in mammals and insects as a cholinesterase inhibitor.

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

CAS#: 757-58-4

Class: **Highly toxic**

Molecular Formula: C2H10O13P4

Form (physical state): Liquid

Color: Yellow

Boiling point: N/A

**Potential Hazards/Toxicity**

Harmful through inhalation, skin, eyes, and ingestion. If inhaled, poisoning due to cholinesterase inhibitors causes increased blood flow to the nose, watery discharge, chest discomfort, shortness of breath and wheezing. May cause skin and eye irritation. May be fatal if swallowed.

**Personal Protective Equipment (PPE)**

**Respiratory 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**

Nitrile or PVC gloves are recommended.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with hexaethyl tetraphosphate (HETP).

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**

Safety glasses with side shields or chemical goggles are recommended.

**Skin and Body Protection**

Lab coat, full length pants or equivalent, and closed toe shoes must be worn.

**Hygiene Measures**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling hexaethyl tetraphosphate (HETP).

**Engineering Controls**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. A fume hood should be used.

**First Aid Procedures**

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Get medical attention immediately.

**In case of skin contact**

Take off contaminated clothing and shoes immediately and flush skin with plenty of soap and water for at least 15 minutes. Wash clothing and thoroughly clean shoes before reuse. Get medical attention immediately.

**In case of eye contact**

Check for and remove any contact lenses. Immediately flush eyes thoroughly with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**If swallowed**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Rinse mouth with water. Get medical attention immediately.

**Special Handling and Storage Requirements**

Handle gently and use good occupational work practice. Avoid personal contact including inhalation. Avoid using near naked lights and heat or ignition sources. Store cases in a well-ventilated location licensed for the potentially explosive compounds. Rotate stock to prevent ageing. Store in a cool place in original containers.

**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”]**

Contaminated instruments and benches should be decontaminated with soap and water. All waste and contaminated disposables should be disposed of 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 hexaethyl tetraphosphate (HETP)., 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:

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