Standard Operating Procedure

Ammonium Hydroxide

*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**

*Ammonium hydroxide* is a base that is used to raise the pH of buffers requiring ammonium ion.

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

CAS#: 1336-21-6

Class: *Corrosive, basic, inorganic*

Molecular Formula: NH4OH

Form (physical state): liquid

Color: colorless

Boiling point: 76.46° F (24.7° C)

**Potential Hazards/Toxicity**

Poison! Danger! Corrosive. May be fatal if swallowed or inhaled. Mist and vapor cause burns to every area of contact. Causes severe burns to skin, eyes, respiratory tract and gastrointestinal tract.

**Personal Protective Equipment (PPE)**

**Respirator Protection**

None required.

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 gloves are recommended.

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

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 goggles are required.

**Skin and Body Protection**

Lab coat, long pants, and closed-toe shoes are required.

**Hygiene Measures**

After working with ammonium hydroxide, immediately remove gloves, wash hands and arms with soap and water.

**Engineering Controls**

Work with ammonium hydroxide in a certified ducted fume hood.

**First Aid Procedures**

**If inhaled**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician

**In case of skin contact**

Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately

**In case of eye contact**

Immediately flush eyes with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately

**If swallowed**

Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Call a physician.

**Special Handling and Storage Requirements**

Keep in tightly closed container. Store in a cool, dry corrosion-proof, ventilated area away from moisture, sources of heat or ignition, combustibles and oxidizers. Protect against physical damage. Always add the caustic to water while stirring, never the reverse. Containers of these materials may be hazardous when empty since they may retain product residues (dust, solids), observe all warnings and precautions. Incompatibilities with ammonium hydroxide: acids, acrolein dimethyl sulfate, halogens, silver nitrate, propylene oxide, nitromethane, silver oxide, silver permanganate, oleum, beta-propiolactone. Most common metals.

**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”]**

Lab coats must be decontaminated before they are removed for laundering. This may be accomplished by washing the affected area in small container of soap and water. Dispose of the soap and water as hazardous waste.

Laboratory work surfaces and equipment shall be decontaminated at the conclusion of each procedure and at the end of each day. Use a soapy, wet paper towel to clean the affected areas and dispose of the paper towel 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**

Use a transfer pipette to add small amounts of ammonium hydroxide (less than 1 ml at a time) to a buffer requiring an increase in pH by ammonium hydroxide. Transfer in the fume hood and then test the pH of the solution. As the pH gets closer to desired point, dilute the ammonium hydroxide 10-fold in water by transferring one ml to 9 ml of ddH20. Transfer this diluted form to the buffer until desired pH is reached.

**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 Ammonium Hydroxide, 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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