Standard Operating Procedure

2-Acetylaminofluorene

*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**

2-Acetylaminofluorene (2-AAF) is a carcinogenic and mutagenic derivative of fluorene. It is used as a biochemical tool in the study of carcinogenesis. It induces tumors in a number of species in the liver, bladder and kidney. The metabolism of this compound in the body by means of biotransformation reactions is the key to its carcinogenicity. 2-AAF is a substrate for cytochrome P-450 (CYP) enzyme, which is a part of a super family found in almost all organisms. This reaction results in the formation of N-hydroxy-2-acetylaminofluorene which is a proximal carcinogen and is more potent than the parent molecule. The N-hydroxy metabolite undergoes several enzymatic and non-enzymatic rearrangements. It can be O-acetylated by cytosolic N-acetyltransferase enzyme to yield N-acetyl-N-acetoxyaminofluorene. This intermediate can spontaneously rearrange to form the arylamidonium ion and a carbonium ion which can interact directly with DNA to produce DNA adducts. In addition to esterification by acetylation, the N-hydroxy derivative can be O-sulfated by cytosolic sulfur transferase enzyme giving rise to the N-acetyl-N-sulfoxy product.

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

CAS#: 53-96-3

Class: **Carcinogen and Mutagen**

Molecular formula: C15H13NO

Boiling Point: 303 °C

Melting Point:194 °C, 467 K, 381 °F

Physical State: Solid powder

Color: white

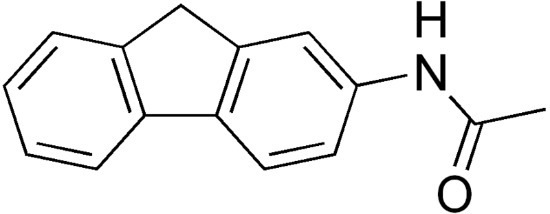
Density: 1.23 g/cm3

Melting point: 194 °C, 467 K, 381 °F

Boiling point: 303 °C

Solubility in water: 0.000529 g/100 mL

Flash point: 277.2 °C

[](http://upload.wikimedia.org/wikipedia/commons/d/d0/Acetylaminofluorene.png)

**Potential Hazards/Toxicity**

Toxic by inhalation, contact with skin, and if swallowed. Causes genetic damage, as it is a regulated carcinogen.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation. Harmful if absorbed through the skin.

Ingestion: Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver damage.

Inhalation: Harmful if inhaled. May cause respiratory tract irritation.

Chronic: Chronic ingestion may cause liver damage. May cause cancer in humans.

**Personal Protective Equipment (PPE)**

* All persons shall wear personal protective equipment when handling 2-Acetylaminofluorene.
* Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.
* Skin: Wear nitrile gloves and protective clothing to prevent skin exposure.
* Clothing: Wear appropriate protective clothing to prevent skin exposure.
* 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/).

**Engineering Controls**

Always handle 2-Acetylaminofluorene in a certified chemical fume hood. Use dry materials in a fume hood, or choose premixed solutions to avoid inhalation exposure.

**First Aid Procedures**

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the

upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing

contaminated clothing and shoes.

Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything

by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air

immediately. If not breathing, give artificial respiration. If breathing is difficult, give

oxygen.

**Special Handling and Storage Requirements**

1. All work with 2-Acetylaminofluorene is to be done in an " 2-Acetylaminofluorene" designated area in order to keep 2-Acetylaminofluorene contamination to a minimum. Any persons in this area are required to wear personal protective equipment. Safety shower and eye wash stations should be easily accessible where 2-Acetylaminofluorene is used.

2. All laboratory equipment (such as beakers, pipettes, etc.) used in the "2-Acetylaminofluorene" designated area are to be labeled as " 2-Acetylaminofluorene contaminated" and are not to be removed from the area without first being decontaminated.

3. Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale.

4. Storage: Store in a cool, dry place. Store in a tightly closed container.

**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”]**

**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 specific description of procedure.)*

**Note:** Any deviation from this SOP requires written approval from PI.

**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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