Standard Operating Procedure

Glacial Acetic Acid

Purpose

Glacial acetic acid is a **flammable** liquid and vapor and **corrosive.**

Causes severe burns by all exposure routes**.** Fumes can be suffocating. These burns or blisters may not appear until hours after exposure.

Toxic by ingestion, inhalation, and skin absorption.

Glacial acetic acid is the component of household vinegar (8% glacial acetic acid), but is also mainly produced as a precursor to polyvinylacetate and cellulose acetate.

Physical & Chemical Properties/Definition of Chemical Group

CAS#: 64-19-7

Class: **Flammable liquid and vapor**

Molecular Formula: CH_3CO_2H

Form (physical state): Solid

Color: White

Boiling point: 117 - 118°C

Potential Hazards/Toxicity

Glacial acetic acid is a **flammable** liquid and vapor.

Causes severe burns by all exposure routes**.** These burns or blisters may not appear until hours after exposure.

Incompatible with heat, flames and sparks.

Chronic exposure may cause chronic inflammation of the respiratory tract and can cause occupational asthma.

Skin sensitization to acetic acid is rare, but has occurred.

Has the following permissible exposure limits: (Vacated) TWA: 10 ppm, (Vacated) TWA: 25 mg/m^3.

Has the following acute toxicity data:

Oral, rat: LD_{50} = 3310 mg/kg;

Skin, rabbit: LD_{50} = 1060 uL/kg;

Personal Protective Equipment (PPE)

Respirator Protection
Respirators should be equipped with acid gas cartridges.

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 EH&S. This is a regulatory requirement.

Hand Protection
Nitrile gloves are required.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with acetic 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
Safety glasses or chemical splash goggles. Goggles are preferred, but required at high acid concentrations.

Skin and Body Protection
Lab personnel working with the chemical need to wear full-length pants or its equivalent, closed-toe footwear with no skin being exposed, and a lab coat.

Hygiene Measures
Wash hands after working with the substance.

Engineering Controls

Handle using a chemical fume hood with good ventilation and electrically grounded lines and equipment.

First Aid Procedures

If inhaled

Move into the fresh air immediately and give oxygen. If not breathing give artificial respiration. Get medical attention immediately.

In case of skin contact
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

In case of eye contact
Check for and remove any contact lenses. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Seek immediate medical attention and continue eye rinse during transport to hospital.

If swallowed
Do NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

Special Handling and Storage Requirements

Precautions for safe handling: Avoid contact with skin and eyes and inhalation. Keep away from sources of ignition. Avoid heat and shock or friction when handling. Store away from strong oxidizing agents or bases.

Conditions for safe storage: **Store away from alkaline agents.** Keep container tightly closed in a cool, dry, and well-ventilated. Keep away from incompatible materials and conditions. Store in original container. Store away from heat sources and in a flame proof area. Keep cool and protect from sunlight.

Spill and Accident Procedure

Chemical Spill Dial 9-911 and 228-7864

Spill – Assess the extent of danger. Help contaminated or injured persons. Evacuate the spill area. Avoid breathing vapors. If possible, confine the spill to a small area using a spill kit or absorbent material. Keep others from entering contaminated area (e.g., use caution tape, barriers, etc.).

Small (<1 L) – If you have training, you may assist in the clean-up effort. Use appropriate personal protective equipment and clean-up material for chemical spilled. Double bag spill waste in clear plastic bags, label and take to the next chemical waste pick-up.

Large (>1 L) – Dial **9-911** and EH&S at 228-7864 for assistance.

Chemical Spill on Body or Clothes – Remove clothing and rinse body thoroughly in emergency shower for at least 15 minutes. Seek medical attention. *Notify supervisor and EH&S at 228-7864 immediately.*

Chemical Splash Into Eyes – Immediately rinse eyeball and inner surface of eyelid with water from the emergency eyewash station for 15 minutes by forcibly holding the eye open. Seek medical attention. *Notify supervisor and EH&S at 228-7864 immediately.*

Medical Emergency Dial 9-911 or 228-7864

Life Threatening Emergency, After Hours, Weekends And Holidays – Dial **9-911** *Note: All serious injuries must be reported to EH&S at **228-7864** within 8 hours.*

Non-Life Threatening Emergency – Go to the Olivewood Meadows Occupational Health 374 Olive during regular business hours. All other times report to Mercy Medical Center 315 Mercy Ave. *Note: All serious injuries must be reported to EH&S at 228-7864 within 8 hours.*

Needle stick/puncture exposure (as applicable to chemical handling procedure) – Wash the affected area with antiseptic soap and warm water for 15 minutes. For mucous membrane exposure, flush the affected area for 15 minutes using an eyewash station. Go to the Olivewood Meadows Occupational Health 374 Olive during regular business hours. All other times report to Mercy Medical Center 315 Mercy Ave. *Note: All needle stick/puncture exposures must be reported to EH&S at 228-7864 within 8 hours.*

Decontamination/Waste Disposal Procedure

Using proper personal protective equipment as outlined above, decontaminate equipment and bench tops using soap and water and properly dispose of all chemical and contaminated disposables as hazardous waste following the guidelines below.

General hazardous waste disposal guidelines:

Label Waste

- Affix an on-line hazardous waste tag on all waste containers using the Online Tag Program http://otp.ucop.edu/ as soon as the first drop of waste is added to the container

Store Waste

- Store hazardous waste in closed containers, in secondary containment and in a designated location
- Double-bag dry waste using transparent bags
- Waste must be under the control of the person generating & disposing of it

Dispose of Waste

- Dispose of regularly generated chemical waste within 90 days
- Call EH&S at 228-7864 for questions
- Empty Containers
    - Dispose as hazardous waste if it once held extremely hazardous waste (irrespective of the container size) A list can be found at http://ehs.ucla.edu/Pub/ExtremelyHazardousWaste.pdf

    Prepare for transport to pick-up location
        - Check on-line waste tag
        - Use secondary containment

Safety Data Sheet (SDS) Location

Online SDS can be accessed at http://ehs.ucmerced.edu/material-safety-data-sheets.

Protocol/Procedure

Add small amounts (i.e. dropwise) to lower pH of electrodeposition solution.

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 hydrochloric 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 a copy of 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 one year.

I have read and understand the content, requirements, and responsibilities of this SOP:

Name	Signature	Date
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