



## Fluorouracil

### Description

*This standard operating procedure outlines the handling and use of fluorouracil. Review this document and supply the information required in order to make it specific to your laboratory. In accordance with this document, laboratories should use appropriate controls, protective equipment, and disposal techniques when handling fluorouracil.*

Synonyms: 5-fluorouracil, 5-FU

### Potential Hazards

- Harmful by inhalation, in contact with skin and if swallowed.
- Marine pollutant. Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

Swallowed: Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. The killing action of antineoplastic drugs used for cancer chemotherapy is not selective for cancerous cells alone but affects all dividing cells. Acute side effects include loss of appetite, nausea and vomiting, allergic reaction (skin rash, itch, redness, low blood pressure, and anaphylactic shock) and local irritation. Gout and renal failure can occur.

Eye: This material can cause eye irritation and damage in some persons.

Skin: Contact with the material may be harmful; systemic effects may result following absorption.

- This material can cause inflammation of the skin on contact in some persons.
- The material may accentuate any pre-existing dermatitis condition.
- Open cuts, abraded or irritated skin should not be exposed to this material.
- Entry into the blood-stream through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Inhaled: Inhalation of dusts, generated by the material, during the course of normal handling, may be harmful.

- The material is not thought to produce respiratory irritation (as classified using animal models). Nevertheless inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
- Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

## Engineering Controls

- Quantities of up to 25 grams may be handled in Class II Types B2 or B3 Biological Safety Cabinets.
- Biological Safety Cabinets used for antineoplastic preparation should be cleaned daily with 70% alcohol solution and decontaminated after use and whenever spills occur. Decontamination procedures should include surface cleaning with high pH agents; thorough rinsing, removal, and cleansing of work trays.

## Work Practice Controls

Decontamination should consist of surface cleaning with water and detergent followed by thorough rinsing. The use of detergent is recommended because there is no single accepted method of chemical deactivation for all agents involved. A plastic backed absorbent pad should be placed under the work area during the process. This should be changed at the end of each process or when a spill occurs

## Personal Protective Equipment (PPE)

Personal protective equipment includes a lab coat, eye protection and appropriate disposable gloves. Gloves should be changed frequently and should be pulled up over sleeves if possible to reduce the likelihood of any exposed skin. Wash hands and arms immediately after working with the substance. Particulate respirator protection should be assessed where incidental or accidental exposure is anticipated.

Note: Respirators are masks designed to protect the wearer from specific airborne hazards and are different from surgical masks, which protect the wearer only from splashes and are primarily intended to protect others from infectious aerosols exhaled by the wearer. Respirator use requires employee participation in the Respiratory Protection Program, which involves medical clearance and annual fit testing and training. Please be clear about use of surgical masks versus respirators. (Do NOT use the vague term “masks”.)

## Transportation and Storage

- Ensure access to chemical is restricted.
- Keep away from strong oxidizers, heat, and light.

Fluorouracil is regulated by DOT as a Hazardous Material as well as through IATA Transport of Dangerous Goods.

## Waste Disposal

All hazardous chemical agent contaminated waste should be placed in a 5-gallon white pail. The container must be closed except when actively adding waste. The container must be located in the area where hazardous drugs are being used. All items contaminated by hazardous drugs, including gloves, syringes, vials needles, and solution containers should be disposed according to EHS guidelines.

Sharps – place needles, syringes with needles attached and other breakable items into appropriately labeled sharps containers.

Empty stock vials, reagent bottles, etc. – triple rinse with copious amounts of water. Deface label with black magic marker or scraper. Place in a cardboard box for disposal.

Because most spent, unused and expired chemicals/materials are considered hazardous wastes, they must be properly disposed of. ***Do not dispose of chemical wastes by dumping them down a sink, flushing in a toilet or discarding in***

**regular trash containers.** Contact EHS at (313) 593-0921 for waste containers, labels, manifests, waste collection and for any questions regarding proper waste disposal. Also, refer to EHS's [Hazardous Waste Webpage](#) for more information.

## Exposures/Unintended Contact



***If the employee is in need of emergency medical attention, call 911 immediately.***



### SWALLOWED

- IF SWALLOWED, SEEK MEDICAL ATTENTION WITHOUT DELAY (see below).
- Urgent hospital treatment is likely to be needed.
- If conscious, rinse mouth with water.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS.

### EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

### INHALED

- If inhaled remove from contaminated area.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Obtain medical attention (see below).

Report all work related accidents, injuries, illnesses or exposures to WorkConnections within 24 hours by completing and submitting the [Illness and Injury Report Form](#). Follow the directions on the WorkConnections website [Forms Instructions](#) to obtain proper medical treatment and follow-up.

Complete the [EHS Laboratory Incident and Near-Miss Report](#) form.

#### **TREATMENT FACILITIES:**

##### **Midwest Medical Center -- *Campus Employees (including student employees)***

Mon-Fri 7:30 am - 4:30 pm

**9301 Middlebelt Road**

Romulus, MI 48174

Phone: 734-941-1000

After hours - go to:

##### **Midwest Medical Center**

Open 24/7

4700 Schaefer

Dearborn, MI 48126

Phone: 313-581-2600

##### **Henry Ford Medical Center-Fairlane -- *University students (non-life threatening conditions)***

19401 Hubbard Drive

**Dearborn, MI 48126**

**Phone: 313-928-8278**

Click [here](#) for more information.

#### **Spill Procedure**

- When a spill occurs, ***personal safety should always come first.***
- Alert and clear everyone in the immediate area where the spill occurred.

A **minor (small) chemical spill** is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel, i.e., (*less than 1 Gallon or 3.5 Liters*). A **major/large chemical spill** requires active assistance from emergency personnel.

#### **Spill Response Steps:**

##### **MINOR CHEMICAL SPILL**

- Alert people in immediate area of spill.
- If spilled material is flammable, turn off ignition and heat sources. Don't light Bunsen burners or turn on other switches.
- Open outside windows, if possible.
- Use proper personal protective equipment (PPE) as indicated above.
- Avoid breathing vapors from spill.
- Confine spill to as small an area as possible.
- **Do not wash spill down the drain.**
- Use appropriate spill kits/sorbents to absorb spill. Collect contaminated materials and residues and place in container and contact EHS (313) 593-0921 for proper disposal.
- Clean spill area with water.

## **MAJOR CHEMICAL SPILL**

Report large chemical spills (*greater than 1 Gallon or 3.5 Liters*) in corridors or common areas, e.g., hallways, elevators, eating areas, rest rooms, offices, etc., to the Public Safety at (313) 593-5333 or (911 from a campus phone).

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to evacuate.
- If spilled material is flammable, turn off ignition and heat sources. Don't light Bunsen burners or turn on other switches.
- **Call Public Safety at (313) 593-5333 or 911 from a campus phone.**
- Close doors to affected area.
- Post warnings to keep people from entering the area.
- Have person available that has knowledge of incident and laboratory to assist emergency personnel.

### **Additional Spill Links:**

- [Chemical Spill Control Information](#)

Report all emergencies, suspicious activity, injuries, spills, and fires to Public Safety by calling at (313) 593-5333 or 911 from a campus phone. Register with the University of Michigan-Dearborn [Emergency Alert System](#).

### **Training of personnel**

All personnel are required to complete the ***Comprehensive Laboratory Safety*** session (**BLS009** or equivalent) via [MyLINC](#). Furthermore, all personnel shall read and fully adhere to this SOP when handling fluorouracil.

### **Certification**

I have read and understand the above SOP. I agree to contact my Supervisor or Lab manager if I plan to modify this procedure.

Name	Signature	UM ID #	Date

**Prior Approval required – Is this procedure hazardous enough to warrant prior approval from the Principal Investigator?**      ☐ YES      ☐ NO

Principal Investigator \_\_\_\_\_

Revision Date \_\_\_\_\_