



Laboratory Standard Operating Procedure for:

Cytotoxins and Antineoplastic Drugs

Principal Investigator (PI) Approval is Required Prior to Performing this Procedure

Description

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

Potential Hazards

Although little research has been done on the long-term risk of occupational exposure to cytotoxic drugs, these drugs have been associated with human cancers at high (therapeutic) levels of exposure. These drugs have been shown to be carcinogens, mutagens and teratogens in many animal species. There is evidence that hazardous drugs may cause spontaneous abortions and increase the risk of congenital malformations. In addition, some of these drugs have been shown to cause acute effects in humans, such as localized skin necrosis (death of tissue), damage to normal skin after surface contact, dizziness, lightheadedness.

Antineoplastic drugs are substances used as a cancer chemotherapeutic agent which affect the reproductive capabilities including chromosomal damage (mutagens), effects on the fetus (teratogens), and are carcinogenic in animal models. Most hazardous drugs either bind directly to genetic material in the cell nucleus or affect cellular protein synthesis. Cytotoxic drugs may not distinguish between normal and cancerous cells. The growth and reproduction of the normal cells are often affected during treatment of cancerous cells.

Engineering Controls

All hazardous drug work will be conducted in a chemical fume hood or Class II Biological Safety Cabinet.

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.

All locations within the laboratory where cytotoxic or antineoplastic chemicals are handled should be demarcated with **designated area** caution tape and/or posted with designated area caution signs. This includes all fume hoods and bench tops where the antineoplastic drugs are handled.

Personal Protective Equipment

Use doubled gloves with nitrile or neoprene gloves. Gloves should be changed frequently. Laboratory coat and safety glasses are required for preparation of material.

Waste Disposal

All hazardous drug 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. Contact EHS at (313) 593-0921 for waste pick-up. Also, refer to EHS's [Hazardous Waste Webpage](#) for more information.

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. Label the box as uncontaminated glass.

Exposures/Unintended Contact



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



For an actual chemical exposure/injury:

- Flush exposed eyes or skin with water for at least 15 minutes, then seek medical attention (see below).
- Note: In case of inhalation, symptoms may be delayed up to 24 hours. Seek medical attention.
- If swallowed, ***obtain urgent medical attention.***

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.
- Wear protective equipment, including safety goggles, gloves and long-sleeve lab coat.
- 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 neutralize corrosives and/or absorb spill. Collect contaminated materials and residues and place in container. For powdered chemicals sweep carefully to avoid generation of dust or, if appropriate, use moist sorbent pads or wet the powder with a suitable solvent and then wipe with a dry cloth. Contact EHS at (313) 593-0921 for proper disposal.
- Clean spill area with water.

MAJOR CHEMICAL SPILL

- 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 immediately for assistance.**
- 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 cytotoxins and antineoplastic drugs.

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

Principal Investigator _____

Revision Date _____