

NIOSH Table 1,2 & 3

Table 1: Antineoplastic drugs

Table 2: Non-antineoplastic hazardous drugs

Table 3: Non-antineoplastic drugs with primarily reproductive effects

Engineering Controls:

- All hazardous materials should be handled and administered in a glove box, fume hood, or ducted biological safety cabinets.

Administrative Controls:

- Each employee working with these agents must follow the recommendations outlined in the University's Chemical Hygiene Program, the individual lab's SOP, and the PI's instructions.
- Only purchase the minimal quantity required.
- The Safety Data Sheet (SDS) for all agents must be reviewed to develop proper handling, disposal, emergency procedures, and possible adverse health effects for the agent.
- After administration, cages must be labeled with special "HAZARDOUS DRUG" or "ANTINEOPLASTIC AGENT" labels, including date of administration. Bedding and the cage should be considered contaminated with the hazardous drug once the agent has been administered and the animals are returned to the cages. Once the course of treatment for the hazardous drug is completed (single or multiple doses), the cage and contents should be considered contaminated until the next cage changing, provided at least 48 hours has elapsed since the date of last administration.

Work Practice Controls:

- Eating, drinking, or the application of lotions or cosmetics in the lab is prohibited.
- All work with these agents should be done on plastic-backed paper to facilitate cleanup. Contaminated materials should be disposed of in a designated waste container; yellow waste container for antineoplastic materials, red waste containers for biological materials, black and/or purple for pharmaceutical waste, and green and/or white for chemical waste. Non-contaminated materials can be disposed of as non-hazardous waste.
- When preparing syringes, expel the air bubbles in the syringe by wrapping the needle with a sterile, alcohol-dampened pledget to absorb any air or agent that might be expelled. After administration, inspect the injection site for leaking or spilled solution and absorb with an alcohol-dampened pledget. Use proper animal handling and restraint devices to reduce the potential for an exposure/needle stick.
- Minimize potential release of aerosols. Care must be exercised when performing activities such as pipetting, pouring, centrifuging, blending, sonication, grinding, opening containers, treating cells or animals, or harvesting cells.
- Transporting prepared solutions outside of the lab must be performed in a sealed, non-breakable secondary containment vessel.
- Wash hands and any potentially exposed skin with soap and water after handling these agents.

Personal Protective Equipment (PPE):

- **The safety data sheet should be reviewed for appropriate glove selection dependent on the materials administered.**

<p>NIOSH Table (cont'd)</p>	<ul style="list-style-type: none"> • The MINIMUM PPE required includes: Lab coat or outer gown, safety glasses or goggles and appropriate gloves. Gloves should extend over cuffs of lab gown or coat. • The gloves should be removed by carefully turning the glove inside out and discarded into a waste bag. Hands should be washed thoroughly before beginning any other activity. <p>Special Precaution Notes:</p> <ul style="list-style-type: none"> • NIOSH considers these agents hazardous drugs, a listing that includes antineoplastic, immunosuppressant, growth factor drugs, agents that are teratogenic, genotoxic, having developmental or reproductive toxicity or causes organ toxicity at low doses, or a drug whose structure and toxicity profile mimics existing drugs listed in this paragraph. Personnel should assume these agents are capable of being absorbed through the skin. • For exposure, personnel are to wash the affected skin area with soap and water for at least 15 minutes. If eye exposure occurs, use an eyewash station for at least 15 minutes. In the event an accidental injection, take immediate first aid measures as listed on the SDS. For all exposures seek medical attention through Strong Memorial Hospital. Bring a copy of the SDS to Strong Memorial Hospital.
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<p>Carcinogens</p> <p>IARC Group 1: Carcinogenic to humans</p> <p>IARC Group 2A: Probably carcinogenic to humans</p> <p>IARC Group 2B: Possibly carcinogenic to humans</p> <p>GHS Cat 1A: Known human carcinogen</p> <p>GHS Cat 1B: Presumed human carcinogen</p> <p>GHS Cat 2: Suspected human carcinogen</p>	<p>Engineering Controls:</p> <ul style="list-style-type: none"> • Work with a carcinogen is to be done in a designated area. Recommended locations include gloves boxes, fume hoods, ducted biological safety cabinets. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Prior to working with a known carcinogen employees shall receive training that includes: the nature of the carcinogenic hazards including local and systemic toxicity; and, the specific nature of the operation involving a carcinogen that could result in exposure. • Any container of carcinogen must list the contents with a generic or proprietary name. Containers shall have the warning words "Cancer-Suspect Agent" displayed immediately under or adjacent to the contents identification. • Entrances to laboratory locations where carcinogens are frequently handled are to be posted with signs bearing the legend: "Cancer-Suspect Agent -Authorized personnel only" • Only purchase the minimal quantity required. • The Safety Data Sheet (SDS) for all agents must be reviewed to develop proper handling, disposal, emergency procedures, and possible adverse health effects for the agent. • When animals are dosed with a carcinogen, a "Carcinogenic Agent" or a "Hazardous Agent" label is to be placed onto the cage. Bedding and the cage should be considered contaminated with the carcinogen after administration. Once the course of treatment for the carcinogen is completed (single or multiple doses), the cage and contents should be considered contaminated until the next cage changing provided at least 48 hours has elapsed since the date of last administration.
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Carcinogens (cont'd)

Work Practice Controls:

- Eating, drinking, or the application of lotions or cosmetics in the lab is prohibited.
- Carcinogens are to be stored in sealed containers in a location separated from other chemicals. Transporting the listed carcinogens must be accomplished using sealed secondary containment vessels.
- Decontamination procedures shall be established and implemented to remove carcinogens from the surfaces of materials/equipment prior to their removal from the work area. At no time must dry sweeping or dry mopping be used to clean up any surface contaminated by a carcinogen. Should a spill occur, the area shall be decontaminated prior to the resumption of normal operations.
- When preparing syringes, expel the air bubbles in the syringe by wrapping the needle with a sterile, alcohol-dampened pledget to absorb any air or agent that might be expelled. After administration, inspect the injection site for leaking or spilled solution and absorb with an alcohol-dampened pledget. Use proper animal handling and restraint devices to reduce the potential for an exposure/needle stick.
- Minimize potential release of aerosols. Care must be exercised when performing activities such as pipetting, pouring, centrifuging, blending, sonication, grinding, opening containers, treating cells or animals, or harvesting cells.
- Transporting prepared solutions outside of the lab must be performed in a sealed, non-breakable secondary containment vessel.
- Wash hands and any potentially exposed skin with soap and water after handling these agents.

Personal Protective Equipment:

- **The safety data sheet should be reviewed for appropriate glove selection dependent on the materials administered.**
- **The MINIMUM PPE required includes: Lab coat or outer gown, safety glasses or goggles and appropriate gloves. Gloves should extend over cuffs of lab gown or coat.**
- Gloves should be removed by carefully turning the glove inside out and discarded into a waste bag. Hands should be washed thoroughly before beginning any other activity.

Special Precaution Notes:

- For exposure, personnel are to wash the affected skin area with soap and water for at least 15 minutes. If eye exposure occurs, use an eyewash station for at least 15 minutes. In the event an accidental injection, take immediate first aid measures as listed on the SDS. For all exposures seek medical attention through Strong Memorial Hospital. Bring a copy of the SDS to Strong Memorial Hospital.

Carcinogen: Methylmercury Chloride

*** In addition to the exposure controls listed above for carcinogens, the following controls are required.**

Engineering Controls:

- All handling of methylmercury is to be done in a chemical fume hood. Preparation of drinking water solution is to be done in a chemical fume hood and the appropriate pH maintained to help prevent methylmercury from vaporizing from the solution.

Work Practice Controls:

- Any used methylmercury drinking water is to be placed into the special "Hazardous Waste Container" provided by EH&S's Environmental Compliance Unit / Hazardous Waste Group. When the containers are approximately $\frac{3}{4}$ full, submit a waste worksheet pickup request through Chematix.

Personal Protective Equipment:

- **Double layer nitrile gloves, lab coat, safety glasses**
* Double nitrile dermal protection also required when changing drinking water

Special Precaution Notes:

Methylmercury chloride can present an extreme health risk when handling the pure materials and when preparing solutions. Methylmercury has been implicated with the death of one researcher and must be handled with extreme caution! It is readily absorbed through intact skin. Do NOT wear latex gloves when handling this agent or solutions, including drinking water.

1-methyl-4phenyl- 1,2,3,4- tetrahydropyridine (MPTP)

Engineering Controls:

- All hazardous materials should be handled and administered in a glove box, fume hood, or ducted biological safety cabinets.

Administrative Controls:

- The PI must develop written Standard Operating Procedures (SOPs) Procedures should be practice before using the active agent.
- The Safety Data Sheet (SDS) for all agents must be reviewed to develop proper handling, disposal, emergency procedures, and possible adverse health effects for the agent.
- The PI is responsible for substance specific training which must include: a discussion of the known and potential hazards, a review of the SDS, an explanation of the lab's SOP and use procedure, the required PPE when handling the pure as well as the solutions of these agents, as well as clean up and disposal procedures.
- After administration, cages must be labeled with special "HAZARDOUS DRUG" or "ANTINEOPLASTIC AGENT" labels, including date of administration. Bedding and the cage should be considered contaminated with the hazardous drug once the agent has been administered and the animals are returned to the cages. Once the course of treatment for the hazardous drug is completed (single or multiple doses), the cage and contents should be considered contaminated until the next cage changing, provided at least 48 hours has elapsed since the date of last administration.

Work Practice Controls:

- Eating, drinking, or the application of lotions or cosmetics in the lab is prohibited.
- Transport MPTP in a closed secondary container; open only in a fume hood.
- Store this agent in a location separate from other chemicals (recommend the agent be stored with other carcinogens and reproductive agents, if present).
- All work with this agent should be done on plastic-backed paper to facilitate cleanup. Contaminated materials should be disposed of in a designated waste container; yellow waste container for antineoplastic materials, red waste containers for biological materials, black and/or purple for pharmaceutical waste, and green and/or white for chemical waste. Non-contaminated materials can be disposed of as non-hazardous waste.
- Minimize potential release of aerosols. Care must be exercised when performing activities such as pipetting, pouring, centrifuging, blending, sonication, grinding, opening containers, treating cells or animals, or harvesting cells.
- Syringe Use: Use only needle-locking or single-unit syringes. Fill syringes for dosing animals in a fume hood or biological safety cabinet. When expelling air bubbles, wrap the needle tip with a sterile, alcohol dampened pledget. When transporting syringes, place in a tray and cover the tray securely. Inspect injection site for leaking or spilled solution and absorb with an alcohol dampened pledget. Immediately dispose of syringes after use in an impervious sharps container. Never recap a syringe.

MPTP (cont'd)

- Wash hands and any potentially exposed skin with soap and water after handling these agents.

Personal Protective Equipment:

- The safety data sheet should be reviewed for appropriate glove selection dependent on the materials administered.
- The MINIMUM PPE required includes: Lab coat or outer gown, safety glasses or goggles and appropriate gloves. Gloves should extend over cuffs of lab gown or coat. Latex gloves are recommended with MPTP powder or when the compound is dissolved in ethanol.
- Frequent glove changes are recommended because the permeability of latex to MPTP in ethanol has not been determined. The gloves should be removed by carefully turning the glove inside out and discarded into a waste bag. Hands should be washed thoroughly before beginning any other activity.

Special Precaution Notes:

- Do not use MPTP as a free base, but only as the hydrochloride or other non-volatile salt.
- Procedures must be in place in the event of a spill. Spills can be differentiated based on the quantity of material involved.
 - Minor Spill Incidents: Less than 30 mg quantities can be cleaned up by trained lab personnel. Required PPE: fastened lab gown, heavy duty latex gloves (or double latex gloves) secured over the cuffs of the lab gown, and an N95 respirator.
 - Major Spills: Greater than 30 mg quantities, must be cleaned up by Environmental Health & Safety (EH&S) personnel. Call X-13 from any university phone.
- For exposure, personnel are to wash the affected skin area with soap and water for at least 15 minutes. If eye exposure occurs, use an eyewash station for at least 15 minutes. In the event an accidental injection, take immediate first aid measures as listed on the SDS. For all exposures seek medical attention through Strong Memorial Hospital. Bring a copy of the SDS to Strong Memorial Hospital.