THE HAZARDS: What are the hazards of cytotoxic drugs?

Cytotoxic drugs are used in healthcare and veterinary settings to treat conditions like cancer, arthritis, and psoriasis. In medical patients, cytotoxic drugs are used to change the way cells divide and multiply. However, if healthy people are exposed to cytotoxic drugs, they can have negative impacts on cellular processes.

THE EFFECTS: What health effects could workers experience from cytotoxic drugs?

Exposing healthy cells to cytotoxic drugs can cause damage to normal cellular division. In general, short-term exposure can cause skin rashes, while long-term exposure can cause cancer and negatively affect reproduction. Individual cytotoxic drugs can have other health effects as well.

THE EXPOSURE: How could I be exposed?

Exposure can occur through contact with skin, puncture of skin, inhalation or ingestion. Exposure may occur through activities like:

- Counting, crushing, or breaking powered tablets;
- Mixing cytotoxic drugs into intravenous fluids;
- Preparing or administering cytotoxic drugs;
- Handling any material that has been in contact with cytotoxic drugs, such as needles, syringes, IV bags, tubing, incontinence products, soiled linens, used personal protective equipment, drug packaging, and waste, or
- Cleaning areas where cytotoxic drugs are used.

KEY INFORMATION

- Cytotoxic drugs can be hazardous to workers
- Exposure can occur through direct or indirect handling of drugs, equipment, waste, or contaminated materials
- A hierarchy of controls should be used to protect workers from exposure
THE CONTROLS: How can I protect myself from harm?

Eliminating or preventing exposure is the best way to protect workers. When employers cannot eliminate the hazard, they must follow a hierarchy of controls, which specifies steps required to assess and control the hazard. The plan should involve workers and should:

- Identify workers at risk of exposure;
- Explain the hazards to workers;
- Identify required training and personal protective equipment (PPE);
- Describe signs and symptoms of exposure; and
- Describe what to do in case of exposure.

Hierarchy of Controls

Listed in order of preference, the following controls should be used where possible to eliminate or reduce exposure.

- Eliminate or substitute materials
- Use engineering controls
- Use administrative controls
- Use personal protective equipment (PPE)

Engineering controls

These controls are the preferred method for controlling the hazard. For cytotoxic drugs they may include:

- Appropriate ventilation systems used during drug preparation and administration (e.g. biological safety cabinets, or fume hoods);
- Storage containers that separate contaminated equipment (e.g. cabinets designed for storage of hazardous drugs that meet the drug manufacturer’s specifications);
- Needle-less systems for preparing and administering drugs, and other safety engineered devices.

Administrative Controls:

These are secondary to engineered controls, but are still important. For cytotoxic drugs they may include:

- Policies that describe safe work procedures for unpacking, preparing, handling, and administering cytotoxic drugs; for handling waste that may contain cytotoxic drugs and materials contaminated with cytotoxic drugs; and for cleaning spills that contain, or may contain, cytotoxic drugs.
- Training and education about how to minimize exposure to cytotoxic drugs or contaminated equipment;
- Labelling cytotoxic medications with a warning label that identifies the hazard;
- Policies that differentiate between clean and potentially contaminated spaces and materials, appropriate work procedures and PPE for each, and safe procedures for moving between them.

Personal Protective Equipment:

These are to be used with both engineered and administrative controls. For cytotoxic drugs they may include:

- Wearing gloves that meet specifications of the cytotoxic drug manufacturer;
- Wearing two pairs of suitable gloves if compounding, administering, or disposing of cytotoxic drugs;
- Wearing eye protection and face shields when there is a possibility of a splash to the face or eyes;
- Wearing protective clothing such as gowns and booties when there is a possibility of a splash to the body, or possibility of a spill;
- Using respirators if there is a chance of exposure to aerosolized drugs, such as when unpacking or mixing drugs.
Cytotoxic Drug Exposure

FOR MORE INFORMATION:

- Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings (National Institute for Occupational Safety and Health (NIOSH))

- Personal Protective Equipment for Health Care Workers Who Work with Hazardous Drugs. (National Institute for Occupational Safety and Health (NIOSH))

- Safe Handling of Hazardous Drugs in Healthcare (Public Services Health & Safety Association)

- Best Practice for the Safe Handling of Hazardous Drugs (WorkSafeBC)

- Safe Handling of Cytotoxic: Guideline Recommendations (Authored by Cancer Care Ontario, published in *Current Oncology*)

© 2017 Government of Alberta

This material is for information only. The information provided in this material is solely for the user’s information and convenience and, while thought to be accurate and functional, it is provided without warranty of any kind. The Crown, its agents, employees or contractors will not be liable to you for any damages, direct or indirect, arising out of your use of the information contained in this material.

If in doubt with respect to any information contained within this material, or for confirmation of legal requirements, please refer to the current edition of the Occupational Health and Safety Act, Regulation and Code or other applicable legislation. Further, if there is any inconsistency or conflict between any of the information contained in this material and the applicable legislative requirement, the legislative requirement shall prevail.

This material is current to July 2017. The law is constantly changing with new legislation, amendments to existing legislation, and decisions from the courts. It is important imperative that you and keep yourself informed of the current law.

This material may be used, reproduced, stored or transmitted for non-commercial purposes. The source of this material must be acknowledged when publishing or issuing it to others. This material is not to be used, reproduced, stored or transmitted for commercial purposes without written permission from the Government of Alberta.