



MIOSHA Fact Sheet

Preventing Exposure to Hazardous Drugs

What are hazardous drugs?

The National Institute for Occupational Safety and Health (NIOSH) classifies drugs as hazardous if studies in animals or humans indicate that exposures to them have a potential for causing cancer, developmental or reproductive toxicity, genotoxicity, or harm to organs such as the liver and kidney.

Drugs considered to be hazardous include anti-neoplastic medications, anti-viral drugs, hormones and bioengineered drugs among others.

These drugs have therapeutic advantages for ill patients that out-weigh the potential risk of side effects; however, healthy employees exposed to these drugs may also experience these harmful side effects.

How are these drugs used?

Current research indicates these drugs are effective in treating diseases such as cancer, rheumatoid arthritis, HIV, and multiple sclerosis.

Many hazardous drugs used to treat cancer bind to or damage DNA (i.e., alkylating agents). Other antineoplastic drugs, some antivirals, antibiotics, and bioengineered drugs interfere with cell growth or proliferation, or with DNA synthesis. In some cases, the nonselective actions of these drugs disrupt the growth and function of both healthy and diseased cells, resulting in toxic side effects for treated patients. These nonselective actions can also cause adverse effects in health care workers inadvertently exposed to hazardous drugs.¹

What is the risk?

Patients treated with high doses of antineoplastic agents exhibit effects such as nausea, rashes, hair loss, liver and kidney damage, hearing loss, cardiac and hematopoietic toxicities and others. Some of these effects are prevalent in exposed workers.

According to NIOSH, published studies have shown that workplace exposures to hazardous drugs can cause both acute and chronic health effects such as skin rashes, adverse reproductive outcomes (including infertility, spontaneous abortions, and congenital malformations), and possibly leukemia and other cancers. The health risk depends on the toxicity of the drugs and how much exposure a worker has to these drugs.²

Who is at risk?

Any employee who handles, administers or manages disposal of hazardous drugs is potentially at risk. These include, but are not limited to:

- Pharmacy staff;
- Nursing staff;
- Physicians;
- Medical assistants;
- Operating room staff;
- Environmental service workers;
- Research staff in laboratories;
- Veterinary care workers; and,
- Shipping and receiving personnel.

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Are there standards to protect employees?

Yes, the following MIOSHA standards apply.

[Part 92 and 430 Hazard Communication](#) requires that employers maintain Safety Data Sheets (SDS) for hazardous drugs to which their employees are exposed. The drugs must be properly labeled according to the requirements of the Federal Drug Administration. Employees must have access to the SDSs and must receive training on the specific hazards posed by each hazardous drug.

[Part 33 and 433 Personal Protective Equipment](#) (PPE) requires employers to perform and certify completion of a hazard assessment to determine what type of PPE must be worn by employees depending on their potential exposure. This may include gloves, goggles, face shield, body and foot (skin) protection.

[Part 451 Respiratory Protection](#) may apply for certain types of drugs and procedures including compounding, repackaging, administration and spill clean-up.

Refer to Section 8 of the SDS for manufacturer's recommendations related to personal protective equipment and respiratory protection.

[Part 1 General Provisions](#) housekeeping rules apply to ensure contaminated surfaces are cleaned.

[Part 474 Sanitation](#) prohibits storage of food and beverages and eating and drinking where there is exposure to toxic materials.

In addition, [Part 554. Bloodborne Infectious Diseases](#) applies where employees are exposed to human blood or other potentially infectious materials. When employees are exposed to contaminated sharps, engineering controls that isolate or remove biological hazards must be used to minimize or eliminate employee exposure. These include sharp disposal containers, self-sheathing needles, and needleless systems. These controls may also reduce the likelihood that an employee is exposed to hazardous drugs conveyed through these safer devices.

[Part 11 Recording & Reporting of Occupational Injuries & Illnesses](#) requirements apply to illnesses that may result from exposure to hazardous drugs. Offices of health practitioners including physicians and dentists; outpatient care centers; medical and diagnostic laboratories; and employers with 10 or less employees are partially exempt from Part 11.

Are there sample written programs?

Yes, MIOSHA has sample programs and guidance documents available. These are only guidelines for developing a site-specific program.

- [Hazard Communication Sample Plan](#) (doc)
- [Personal Protective Equipment Guide](#) (doc)
- [Respiratory Protection Program](#) (doc)
- [Bloodborne Sample Exposure Control Plan](#) (doc)
- [Recordkeeping Forms and Resources](#) (html)

Additional Information

Questions regarding hazardous drugs use may be emailed to the Centers for Disease Prevention and Control (CDC) at hazardousdrugs@cdc.gov

Please visit the MIOSHA website at www.michigan.gov/mioshapublications for additional information on MIOSHA standards; or contact the Consultation, Education & Training Division at (517) 284-7720.

Resources

CDC - NIOSH Hazardous Drugs webpage: www.cdc.gov/niosh/topics/hazdrug

State of Washington, Department of Labor and Industries (WA-OSHA):

- [Hazardous Drugs Program Guides](#)
- [Training](#)

References

1. [NIOSH Alert: Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings](#) (pdf)
2. [NIOSH Workplace Safety and Health: Hazardous Drug Exposures in Healthcare](#)