NIOSH ALERT

Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings

Warning!

Working with or near hazardous drugs in health care settings may cause skin rashes, infertility, miscarriage, birth defects, and possibly leukemia or other cancers.

Health care workers who work with or near hazardous drugs may be exposed to these agents in the air or on work surfaces, clothing, medical equipment, or patient urine or feces. Hazardous drugs include those used for cancer chemotherapy, antiviral drugs, hormones, some bioengineered drugs, and other miscellaneous drugs (see Appendix A of *NIOSH Alert: Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings* for a list of hazardous drugs). The health risk depends on how much exposure a worker has to these drugs and how toxic they are.

Health care workers should take the following steps to protect themselves from hazardous drugs:

- Read all information and material safety data sheets (MSDSs) your employer provides to you for the hazardous drugs you handle.
- Participate in any training your employer provides on the hazards of the drugs you handle and the equipment and procedures you should use to prevent exposure.
- Be familiar with and able to recognize sources of exposure to hazardous drugs. Sources of exposure include
  - all procedures involving hazardous drugs (including preparation, administration, and cleaning), and
  - all materials that come into contact with hazardous drugs (including work surfaces, equipment, personal protective equipment [PPE], intravenous [IV] bags and tubing, patient waste, and soiled linens).
- Prepare hazardous drugs in an area that is devoted to that purpose alone and is restricted to authorized personnel.
- Prepare hazardous drugs inside a ventilated cabinet designed to protect workers and others from exposure and to protect all drugs that require sterile handling.
- Use two pairs of powder-free, disposable chemotherapy gloves, with the outer one covering the gown cuff whenever there is risk of exposure to hazardous drugs.

- Avoid skin contact by using a disposable gown made of polyethylene-coated polypropylene material (which is nonlinting and nonabsorbent). Make sure the gown has a closed front, long sleeves, and elastic or knit closed cuffs. Do not reuse gowns.
- Wear a face shield when splashes to the eyes, nose, or mouth may occur and when adequate engineering controls (such as the sash or window on a ventilated cabinet) are not available.
- Wash hands with soap and water immediately *before* using personal protective clothing (such as disposable gloves and gowns) and *after* removing it.
- Use syringes and IV sets with Luer-Lok™ fittings for preparing and administering hazardous drugs.
- Place drug-contaminated syringes and needles in chemotherapy sharps containers for disposal.
- When supplemental protection is needed, use closed-system drug-transfer devices, glove bags, and needleless systems inside the ventilated cabinet.
- Handle hazardous wastes and contaminated materials separately from other trash.
- Clean and decontaminate work areas before and after each activity involving hazardous drugs and at the end of each shift.
- Clean up small spills of hazardous drugs immediately, using proper safety precautions and PPE.
- Clean up large spills of hazardous drugs with the help of an environmental services specialist.

Employers of health care workers should take the following steps to protect their workers from exposure to hazardous drugs:

- Make sure you have written policies about the medical surveillance of health care workers and all phases of hazardous drug handling—including receipt and storage, preparation, administration, housekeeping, decontamination and cleanup, and disposal of unused drugs, contaminated spills, and patient wastes.
- Seek input from workers who handle hazardous drugs when developing these policies and other programs to prevent exposures.
- Prepare a written inventory of all hazardous drugs used in the workplace, and establish a procedure for regular review and updating of this inventory.
- Train workers to recognize and evaluate hazardous drugs and to control exposure to them.
- Provide workers who handle or work near hazardous drugs with appropriate information and MSDSs.
- Provide a work area that is devoted solely to preparing hazardous drugs and is limited to authorized personnel.
- Do not permit workers to prepare hazardous drugs using laminar-flow work stations that move air from the drug toward the worker.
- Provide and maintain ventilated cabinets designed to protect workers and others from exposure to hazardous drugs and to protect all drugs that require sterile handling. Examples of ventilated cabinets include biological safety cabinets (BSCs) and containment isolators designed to prevent hazardous drugs from escaping into the work environment.
- Filter the exhaust from ventilated cabinets with high-efficiency particulate air filters (HEPA filters). Make sure these cabinets are exhausted to the outdoors wherever feasible—well away

from windows, doors, and other air-intake locations.

- Consider providing supplemental equipment to protect workers further—for example, glove bags, needleless systems, and closed-system drug-transfer devices.
- Establish and oversee appropriate work practices for handling hazardous drugs, patient wastes, and contaminated materials.
- Provide workers with proper PPE on the basis of a risk assessment and train workers how to use it—as required by the Occupational Safety and Health Administration (OSHA) PPE standard [29 CFR* 1910.132]. PPE may include chemotherapy gloves, nonlinting and nonabsorbent disposable gowns and sleeve covers, and eye and face protection.
- Ensure the proper use of PPE by workers.
- Use NIOSH-certified respirators [42 CFR 84]. ***Note: Surgical masks do not provide adequate respiratory protection***.
- Provide syringes and IV sets with Luer-Lok™ fittings for preparing and administering hazardous drugs. Also provide containers for their disposal.
- Consider using closed-system drug-transfer devices and needleless systems to protect nursing personnel during drug administration.
- Periodically evaluate hazardous drugs, equipment, training effectiveness, policies, and procedures in your workplace to reduce exposures as much as possible.
- Comply with all relevant U.S. Environmental Protection Agency/Resource Conservation and Recovery Act (EPA/RCRA) regulations related to the handling, storage, and transportation of hazardous waste.

For additional information, see ***NIOSH Alert: Preventing Occupational Exposures to Antineoplastic and other Hazardous Drugs in Health Care Settings*** [DHHS (NIOSH) Publication No. 2004–165]. Single copies of the Alert are available from the following:

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