

Ensuring Healthcare Worker Safety When Handling Hazardous Drugs

Hazardous drugs (HDs) are chemicals that demonstrate one or more of the following characteristics: carcinogenicity, genotoxicity, teratogenicity, reproductive toxicity, or organ toxicity. In addition, newer drugs with a structural or toxicity profile that mimics an agent known to be hazardous by one of the aforementioned criteria also should be treated as such (National Institute for Occupational Safety and Health [NIOSH], 2016). Any HD-handling activity can result in exposure for healthcare workers (HCWs), as documented in a multitude of case reports and studies throughout the medical literature. Exposure to HDs has been associated with acute symptoms (e.g., nasal sores, hair loss, skin rash), adverse reproductive outcomes (e.g., infertility, miscarriage), genetic changes (e.g., chromosomal aberrations, sister-chromatid exchanges), and an increased occurrence of cancer (Centers for Disease Control and Prevention [CDC], 2019).

The Occupational Safety and Health Administration (OSHA) acknowledged the occupational risks of HDs and issued recommendations for their safe handling more than 30 years ago (OSHA, 1986). Updated guidelines from NIOSH and professional societies subsequently have been published (NIOSH, 2016; Polovich & Olsen, 2018; Power & Coyne, 2018). All guidelines address the need for HD-related policies and procedures, education and training, and safe-handling precautions in settings in which HDs are present. Safe-handling precautions include the use of engineering controls, safety equipment, safe work practices, and personal protective equipment (PPE). When used appropriately and consistently, recommended precautions reduce occupational HD exposure (NIOSH, 2004).

Occupational HD exposure can be minimized by a comprehensive HD safe-handling program based on a

hierarchy of controls (Connor & McDiarmid, 2006). When a hazard cannot be eliminated, engineering controls are recommended to control exposure. For antineoplastic HDs, engineering controls must be used in a way consistent with expertise within consensus guidelines of United States Pharmacopeia (USP) chapters. Administrative controls are the next level of protection and include safe-handling policies and procedures, hazard communication, education, and medical surveillance of those who potentially are exposed. Finally, PPE that has been tested for use with HDs provides barrier protection for workers. PPE includes gowns, gloves, eye and face shields, and respirator protection, depending on the HD-handling activities. Both employers and employees must share the responsibility for HD safe handling.

It is the position of ONS and HOPA that

- Settings in which HDs are present will establish evidence-based policies and procedures for safe handling that comply with regulatory requirements and standards.
- Settings in which HDs are present will ensure that PPE indicated for handling HDs is available to all staff to minimize exposure.
- Settings in which antineoplastic HDs are prepared and administered will provide and maintain primary engineering controls, such as biologic safety cabinets and compounding aseptic containment isolators, in conjunction with secondary engineering controls, such as buffer rooms or segregated compounding areas, consistent with USP chapters.
- Settings in which antineoplastic HDs are administered will ensure the use of supplemental engineering controls at the point of compounding and administration when the dosage form allows.
- Settings in which HDs are present will provide education and training specific to each staff member whose work puts them at risk for exposure to HDs. Education, training, and competency evaluation will include the risks of exposure, including the reproductive and developmental effects, the

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recommended precautions for specific handling activities, safe handling of contaminated patient excreta, proper disposal of contaminated waste, and how to handle acute exposure.

- Settings in which HDs are present will protect the rights of staff who are trying to conceive, who are pregnant, or who are breastfeeding to engage in alternative duty that does not require HD handling.
- Settings in which HDs are present will ensure that patients who receive these drugs and their caregivers receive education about safe handling to minimize unintended exposure in both the institutional and home setting.
- Settings in which HDs are present will ensure that HD waste is disposed of according to regulatory guidelines and in a manner that protects staff and the environment.
- Settings in which HDs are present should engage in medical surveillance of staff.
- Settings in which HDs are present should conduct surface wipe testing as a measure of exposure control to aid in the continuous process improvement for handling HDs.
- Our professional societies support and encourage continued research and the generation of new knowledge about the risks of HD exposure and the efficacy of risk-reduction strategies.
- Our professional societies will continue to explore evidence-based strategies for mitigation of risk associated with handling HDs and share recommendations with our respective members.
- Our professional societies support and encourage compliance with all NIOSH recommendations, USP compounding standards, and regulatory requirements.

- Our professional societies support and encourage advocacy efforts to make recommendations and standards into enforceable laws that best protect staff and the environment.

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