Engineering controls for the safe administration of hazardous drugs

Ensuring Healthcare Worker Safety When Handling Hazardous Drugs. Joint Position Statement From the Oncology Nursing Society and the Hematology/Oncology Pharmacy Association Ensuring Healthcare Worker Safety When Handling Hazardous Drugs.

United States Pharmacopeial Convention. USP General Chapter <800>: Hazardous Drugs – Handling in Healthcare Settings.

The National Institute of Occupational Safety and Health: Hierarchy of Controls.

What are hazardous drugs?

Hazardous drugs are chemicals that demonstrate one of more of the following characteristics: carcinogenicity, genotoxicity, teratogenicity, reproductive toxicity or organ toxicity, or chemicals with a structural or toxicity profile that mimics an agent known to be hazardous as per the above criteria. Exposure to hazardous drugs has been associated with acute symptoms, adverse reproductive outcomes, genetic changes and an increased occurrence of cancer.

What does 'handling' mean?

Handing includes, but is not limited to, the receipt, storage, compounding, dispensing, administration and disposal of sterile and nonsterile products and preparations.

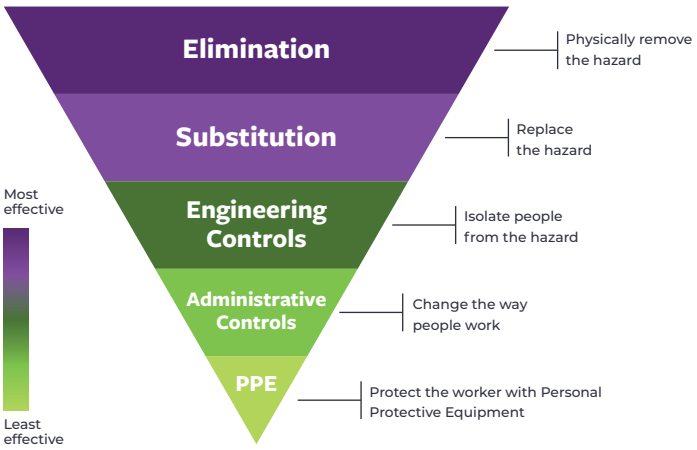
Who is at risk of exposure?

Personnel who may be at risk of exposure include pharmacists, pharmacy technicians, nurses, physicians, physician assistants and home healthcare workers.

Hierarchy of controls

The National Institute of Occupational Safety and Health (NIOSH) defines a hierarchy of controls that serve to mitigate or eliminate a hazard, ranked in order of effectiveness.

In a Position Statement issued by the Oncology Nursing Society and the Hematology/Oncology Pharmacy Association is the statement 'settings in which antineoplastic hazardous drugs are administered will ensure the use of supplemental engineering controls at the point of compounding and administration when the dosage form allows'. All guidelines address the need for hazardous drug-related policies and procedures, education and training; *the only guideline to date to state that closed system transfer devices (CSTDs) must be used for administration is that issued by the United States Pharmacopeial Convention.*



What does USP<800> say about:

Engineering controls for sterile and non-sterile compounding of hazardous drugs?

- Engineering controls protect the preparation from cross-contamination and microbial contamination during all phases of the compounding process, and comprise three categories (primary, secondary and supplementary) of control.
- A containment primary engineering control (C-PEC) is a ventilated device that minimises exposure to hazardous drugs when workers are directly handling.
- The containment secondary engineering control (C-SEC) is the room where the C-PEC is found. And the supplemental engineering controls (e.g., CSTDs), offer additional levels of protection.
- Sterile and non-sterile hazardous drugs must be compounded within a C-PEC located in a C-SEC.
- A CSTD must not be used as a substitute for a C-PEC when compounding and should be used when compounding hazardous drugs when the dosage form allows.

Engineering controls for administration of hazardous drugs?

- Hazardous drugs must be administered safely using protective medical devices (e.g., needleless and closed systems) and techniques.
- CSTDs must be used for administration of antineoplastic hazardous drugs when the dosage form allows.

Conclusions

- No single approach can protect all workers in healthcare workplaces against all hazardous drugs
- CSTDs must be seen as just one in a suite of tools engineered to minimise the risk of exposure.

Safe Handling of Hazardous Drugs