



Safe Handling of Hazardous Drugs October 2, 2020 UPDATE

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Learning Objectives

- Explain the health risks associated with occupational exposure to hazardous drugs
- Discuss safe handling of hazardous drug standards
- Understand how to stay safe with limited PPE supply during COVID-19






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Significance

- 8 million healthcare workers in the U.S. potentially exposed to hazardous drugs (HDs)
 - Pharmacy and nursing staff involved in mixing and administering at highest risk
- Not just chemotherapy
- Many of these drugs are now oral
- Patients may be on them for life
- Frequent admissions to non-oncology floors in hospitals
- The use of hazardous drugs in nonmalignant conditions is increasing
- Many biologically engineered drugs exist with unknown health risks
- Exposure monitoring is not possible at this time and there is not a permissible exposure limit

Bureau of Labor Statistics, 2011; CDC, 2011; IARC, 2008



Definition of Hazardous Drugs

Any drugs that exhibit at least one of the characteristic listed

Genotoxic

Reproductive
toxicity

Teratogenic

Carcinogenic

Structure or
toxicity similar to
drugs classified as
hazardous

Organ toxicity at
low doses

(NIOSH, 2004)



Types of Exposure

- **Dermal***
 - Direct contact
- **Ingestion**
 - Food, gum
 - Hand-to-mouth
- **Inhalation**
 - Aerosols
 - Dust
 - Vapors
- **Injection**
 - Sharps
 - Breakage



*Most common source of exposure (NIOSH, 2004)





Adverse Effects of HD Exposure

- Allergic asthma
- Dyspnea
- Ocular irritation
- Abdominal pain
- Diarrhea
- Nausea/vomiting
- Hair thinning
- Mouth and nasal sores
- Skin irritation/contact dermatitis
- Dizziness
- Headaches
- Reproductive
 - Congenital abnormalities
 - Ectopic pregnancy
 - Infertility
 - Learning disabilities in offspring
 - Low birth weight
 - Premature delivery
 - Spontaneous abortions, miscarriages, stillbirths
- Biologic changes
 - Genetic damage
- Increased occurrence of cancer

Polovich & Olsen, 2018



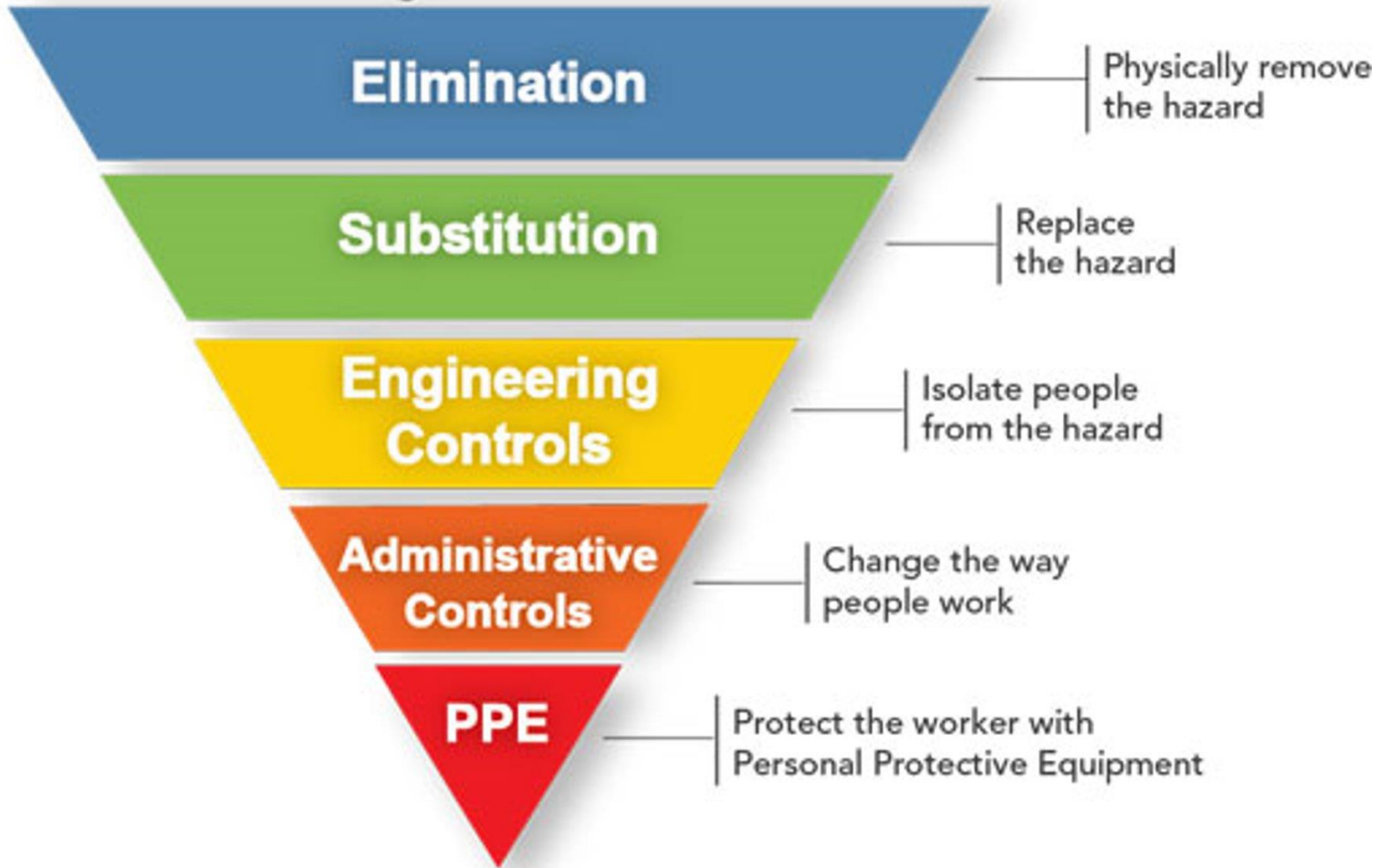


Hierarchy of Controls

Most effective



Least effective



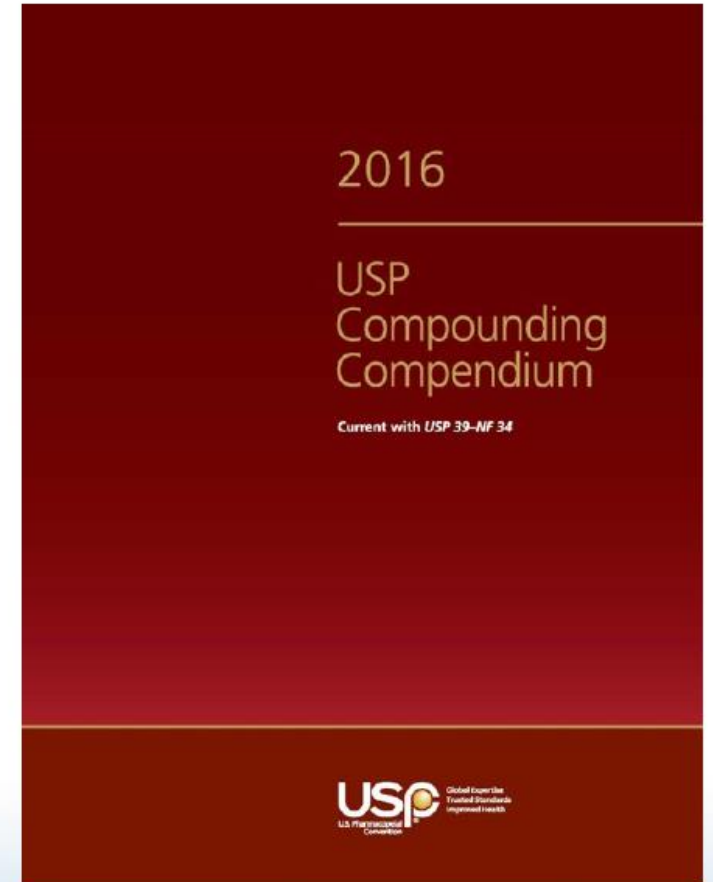
<https://www.cdc.gov/niosh/topics/hierarchy/>



USP <800> Handling Hazardous Drugs

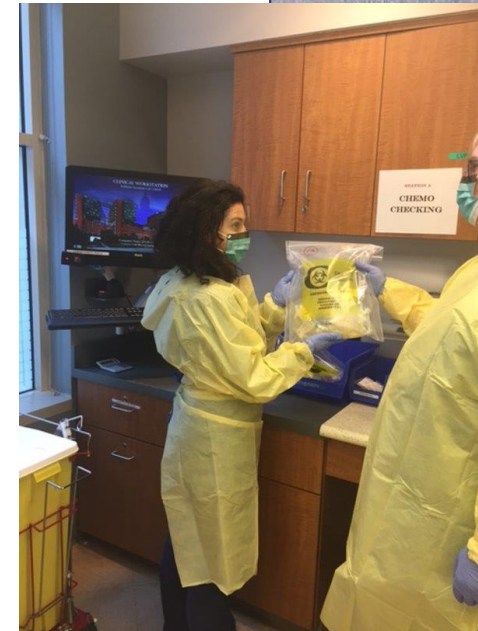
- Published
 - February 1, 2016
- Will become official
 - Delayed ~12-18 months
- Standard not a guideline

<http://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare>



Personal Protective Equipment (PPE)

- **Gloves:**
 - *two pair, tested with hazardous drugs*
 - powder-free
 - latex, nitrile, neoprene
- **Gowns:**
 - *tested with hazardous drugs*
 - *Polyethylene-coated or other laminate material*
 - disposable, single-use
 - Closed cuffs that are elastic or knit
 - back closure
 - Cloth gowns or surgical scrubs are not appropriate
- **Face and eye protection**
 - when splashing is possible
- **Respirator**
 - aerosols & spills
 - Chemical cartridge type respirator
 - Powered air-purifying respirator (PAPR)



ASHP, NIOSH, OSHA, ONS, ASTM, D6978





Oncology Nursing Society Interim Guidelines During the COVID-19 Pandemic

- **Gowns**

Options:

- **ONS Recommended:** Disposable poly-coated gown
- Regular disposable gown (water resistant)
- Cloth gown (facility laundered) for infection control and nonhazardous drugs





Oncology Nursing Society Interim Guidelines During the COVID-19 Pandemic

- **Masks**

Options:

- **ONS Recommended:** Mask with face and eye protection required only if splashing is likely and for spill cleanup
- Reserve N95 masks for symptomatic or COVID-positive patients, hazardous drug spills and cleanup.
- Use powered air purifying respirators (PAPRs).





Oncology Nursing Society Interim Guidelines During the COVID-19 Pandemic

- **Eye Protection**
 - ***ONS Recommended:*** Mask with eye protection or goggles if splashing is likely or spill cleanup
 - Can also use full facepiece air purifying respirators or PAPRs.





Oncology Nursing Society Interim Guidelines During the COVID-19 Pandemic

- **Gloves**

Options:

- ***ONS Recommended:*** Double chemotherapy-tested gloves
- Single chemotherapy-tested glove
- Double standard exam gloves
- Single standard exam glove





Oncology Nursing Society Interim Guidelines During the COVID-19 Pandemic

- **Options for Safe Handling of Table 1 NIOSH Drugs**
- **Recommended:** Per [ONS and Hematology/Oncology Pharmacy Association guidelines](#) (2019),
 - Use one poly-coated gown to hang or take down chemotherapy and double chemotherapy-tested gloves.
 - Use one gown for one patient. Between uses, hang gown inside out near patient and away from surfaces where it could become contaminated.
 - One nurse performs all takedowns of chemotherapy.
 - Use gloves only and no gown for lower hazardous–risk drugs (e.g., rituximab).



Resources

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- Polovich, M., Olsen, M., LeFebvre, K. (2014). Chemotherapy and Biotherapy Guidelines and Recommendations for Practice 4th ed. Oncology Nursing Society, Pittsburgh, PA
- Improving Safe Handling Practices for Hazardous Drugs: Toolkit-Joint Commission/BD
<https://hazmedsafety.com/en>
- USP <800> Standards
<http://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare>
- USP <800> HazRX™
<https://www.usp.org/hazrx-app>
- NIOSH
https://www.cdc.gov/niosh/topics/antineoplastic/pdf/hazardous-drugs-list_2016-161.pdf





Resources (Cont'd)

- ONS: Personal Protective Equipment for Use With Hazardous Drugs:

https://www.ons.org/sites/default/files/PPE_with_HDs_2016.pdf

- Occupational Safety and Health Administration:

https://www.osha.gov/SLTC/hazardousdrugs/controlling_occeh_hazardousdrugs.html

- Ready for USP 800-Bbraun

<https://www.readyfor800.com/>



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When PPE becomes limited or scarce, what strategies can be implemented to maintain safety for health care workers who can handle HDs?





How is PPE protection for handling HDs different from PPE used for infections such as COVID?





How can PPE for HDs be preserved during a pandemic?





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