

CYTOTOXIC EXPOSURE AND Healthcare Worker Risks

Cancer drugs are saving patient's lives but they may also be harming the lives of health care professionals as well. It is widely documented that exposure to these drugs puts workers at risk for developing adverse health effects. Contamination can happen from the time the drug is received, through preparation, administration and disposal. This exposure should be thought of as unacceptable since studies to educate and equipment and devices to minimize risks are readily available.



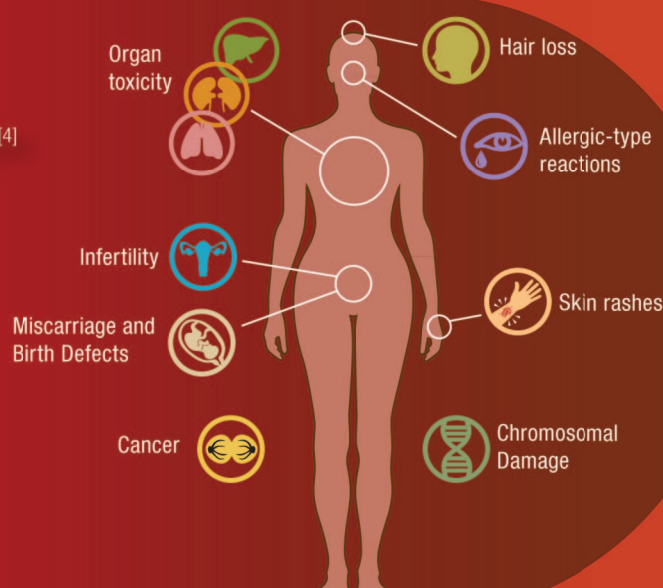
WHO'S AT RISK?

It is estimated that **8 million** healthcare workers in the U.S. alone are exposed to hazardous drugs.^[2]



WHAT ARE THE RISKS?

2 out of 10 nurses who handled chemo drugs **lost their pregnancy** according to one large study^[6]



DID YOU KNOW!

Chemo drugs originated from mustard gas. The beginnings of the modern era of cancer chemotherapy can be traced to the 1940's. It was discovered that the nitrogen mustard in mustard gas bombs all but ceased the division of certain types of Somatic cells and could also potentially be put to use in helping to suppress the division of certain types of cancerous cells.^[1]

HOW DOES EXPOSURE OCCUR?

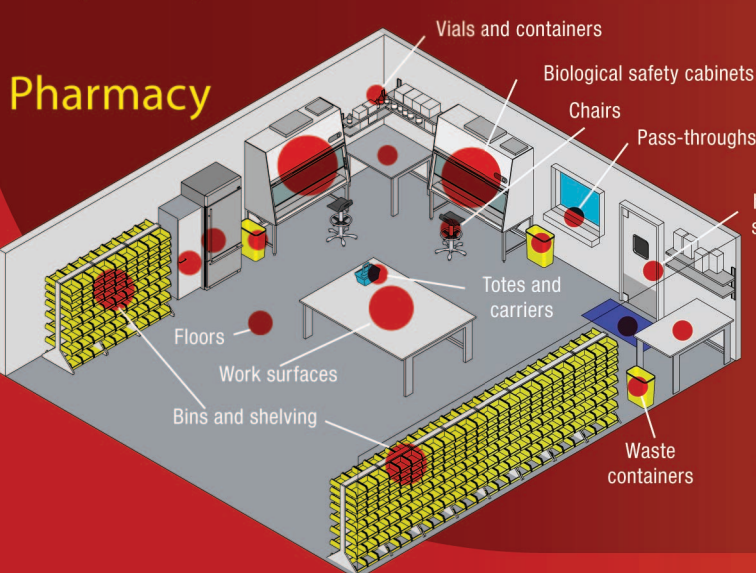


Routes of Exposure^[5]

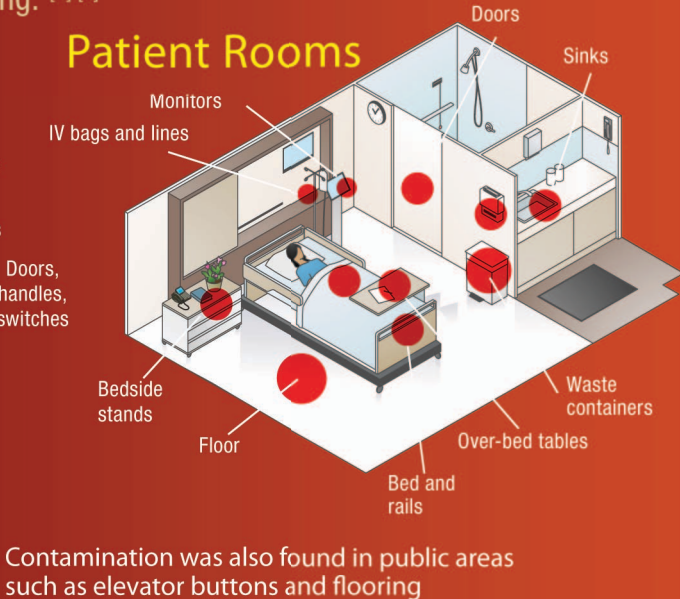
75% of wipe samples from several hospitals were found to be contaminated with at least one chemo agent. Contamination can happen during preparation, transport, administration and disposal of chemo drugs. The outside of vials may be received from the manufacturer contaminated with drug, then may leak, aerosolize, spill and spread during handling.^{[7] [8]}

The primary sources of exposure are:

Pharmacy



Patient Rooms



Contamination was also found in public areas such as elevator buttons and flooring

HOW CAN EXPOSURE BE PREVENTED?

Proper precautions are essential when handling hazardous drugs starting with receiving and continuing throughout all touch points to disposal. NIOSH, ASHP, ONS, OSHA and other organizations have published guidelines to help prevent exposure.^{[8] [9] [10]}

CLEANING

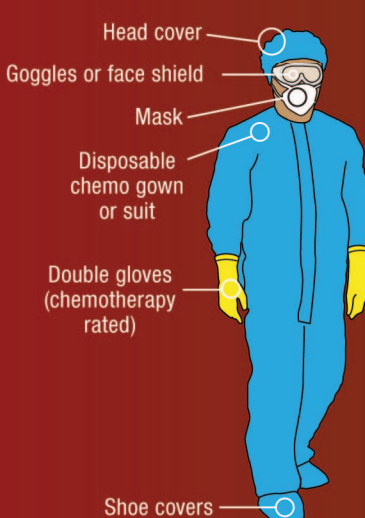


PROPER DISPOSAL

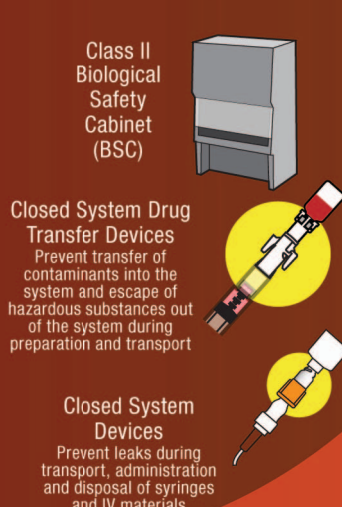


PROTECTION

Wear Personal Protective Equipment (PPE)



Use Protective Engineering Devices



[1] Li, Jie Jack (2006). Laughing Gas, Viagra, and Lipitor: The Human Stories behind the Drugs We Use. Oxford University Press. p. 8. ISBN 0-19-530099-8.

[2] US Bureau of Labor Statistics. May 2006 National and Occupational Employment and Wage Estimates. Washington DC: United States Department of Labor, Bureau of Labor Statistics; 2007.

[3] CDC (Centers for Disease Control and Prevention) Occupational Exposure to Antineoplastic Agents, <http://www.cdc.gov/niosh/topics/antineoplastic/>, accessed 2/18/2013.

[4] Niosh Guidelines: Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings, 2004, p1.

[5] Niosh Guidelines: Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings, 2004.

[6] Lawson CC, Rocheleau CM, Whelan EA, et al. Occupational exposures among nurses and risk of spontaneous abortion. Am J Obstet Gynecol 2012;206:327.e1-8.

[7] Tillyou Sarah. Cytotoxic drug residues Still Lurking in Health Care Facilities, Pharmacy Practice News. 2010; Issue 1, Vol 37:01.

[8] Niosh Guidelines: Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings, 2004.

[9] Occupational Safety and Health Administration (OSHA) Technical Manual, Controlling Exposure to Hazardous Drugs, Section IV Chapter 2, 1999.

[10] American Society of Health System Pharmacists. ASHP Guidelines on Handling Hazardous Drugs. Am J Health-Syst Pharm. 2006; 63:1172-93

[11] <http://www.iniv.wa.gov/safety/topics/atoz/hazardousdrugs/>

[12] <http://www.iniv.wa.gov/chemo-main>, accessed 2/18/2013

[13] <http://www.nejm.org/doi/full/10.1056/NEJM198511073131901>

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