ESOP Pharmacy technician WG

Spill kit

1. Know the medication that needs to be used in the spill kit when disclosing
2. Know the composition of spill kits and their purpose.
3. Know how to use the spill kit

Hazardous drugs (HDs): Definition

Hazardous drugs should be considered hazardous and handled within an established safety program. The technical assistance bulletin's definition of HDs was revised by the National Institute for Occupational Safety and Health (NIOSH) Working Group on Hazardous Drugs for the 2004 alert. These definitions are compared in Table 1. For purposes of these guidelines, the definition from the 2004 NIOSH Alert is used (Appendix A). NIOSH. The NIOSH 2004 HD Alert contained an appendix of HD lists compiled from information provided by 4 organizations that had generated lists of HDs for their respective institutions, as well as a list from the Pharmaceutical Research and Manufacturers of America.6 NIOSH adopted a mechanism both to review its HD criteria and to update its HD list every 2 years by reviewing the existing drugs on the HD list and examining newly approved drugs, and drugs with new Food and Drug Administration (FDA) warnings against the NIOSH HD criteria. The review process for the addition of the new listings is described in the Federal Register. From 2004 through 2012, NIOSH recommended that standard precautions or universal precautions be taken in handling HDs. In 2014, with the addition of many non-antineoplastic drugs and drugs in tablet and/or capsule form to the list, NIOSH noted that no single approach could cover the diverse potential occupational exposures to the drugs.

This change required the development of a new format for the 2014 NIOSH list of HDs, which for the first-time divided HDs into 3 groups:

• Group 1: antineoplastic drugs (AHFS Classification 10:00) [ASHP/AHFS DI 2013]. Many of these drugs may also pose a reproductive risk for susceptible populations.

• Group 2: non-antineoplastic drugs that meet 1 or more of the NIOSH criteria for an HD. Some of these drugs may also pose a reproductive risk for susceptible populations.

• Group 3: drugs that primarily pose a reproductive risk to men and women who are actively trying to conceive and women who are pregnant or breast-feeding (some of these drugs may be present in breast milk).

Table 1. Comparison of NIOSH and ASHP Definitions of Hazardous Drugs

NIOSH	ASHP
Carcinogenicity	Carcinogenicity in animal models, in the patient population, or in both as reported by the International Agency for Research on Cancer
Teratogenicity or developmental toxicity	Teratogenicity in animal studies or in treated patients
Reproductive toxicity	Fertility impairment in animal studies or in treated patients
Organ toxicity at low doses	Evidence of serious organ or other toxicity at low doses in animal models or in treated patients
Genotoxicity	Genotoxicity (i.e., mutagenicity and clastogenicity in short-term test systems)
Structure and toxicity profile of new drugs that mimic existing drugs determined hazardous by the above criteria.	

Spill kits

An appropriate spill kit should be present in the store near the CAs storage zone and should be used in case of a spill or if there is sign of spill on the outer packaging. The store staff should not handle spillage or leakage, rather they should post a sign to warn people not to go near the contaminated area. Additionally, they should know whom to contact and the area should be evacuated if necessary. The chemical safety officer or member of the departmental safety team dealing with spillage and leakage should be notified to deal with this event.

A cytotoxic spill kit should be carried during transportation of CA vials and tubes within university premises. The cytotoxic spill kit should enable quick and safe access to remove commonly listed/used cytotoxics and should comply with the requirements set forth by recognized guidelines such as AJHP or ISOPP.

Suggested contents of the spillage kit

Item	Quantity
Filtered face piece respirator (FFP2 or FFP3)	2
Absorbent towel	1
Absorbent pad	2
Nitrile gloves (non sterile)	8 (4 pairs)
Chemoprotect gown	2
Overshoes	4
Safety glasses	2
Plastic tweezers	1
Plastic aprons	2
Armlets	4
Cytotoxic waste bag	2
Sodium Bicarbonate 8.4%	2
Bottle sterile water	1
Cytotoxic waste container	1
Cytotoxic spillage sign	1
Spillage policy	1

Spill kit policy

Liquid spill

1. Call for assistance and warn others.
2. Cordon off the area to avoid spreading.
3. Do not leave the spill unguard.
4. Obtain the cytotoxic spillage kit.
5. Put the cytotoxic spill sign in place to warn others.
6. From the kit put on:
    a. Respirator mask
    b. Two pairs of nitrile gloves
    c. Safety Glasses
    d. Overshoes
    e. Chemoprotect gown
    f. Armlets
7. Soak up the spill using absorbent towel for small spills OR absorbent pad for large spills by working from the outside of the spill to the inside the spill, placing the absorbent towel or pad gently over the spill to avoid splashing.
8. Pick up any broken or sharp material with tweezers.
9. Place the absorbent towel or pad and any sharp material in the cytotoxic waste container.
10. Using absorbent towel, clean the spill area with water at least three times. Use a new section of absorbent towel for each clean and place into the cytotoxic waste container.
11. Remove personal protective equipment in the following order:
    a. Outer gloves
    b. Mask and goggles
    c. Gown and armlets
    d. Shoe covers
    e. Inner gloves
12. Treat all waste and personal protective equipment used as cytotoxic.
13. Place all waste into cytotoxic waste container or cytotoxic waste bag.

14. Complete printed label section details on waste bag or waste container used.
15. Use bag ties to seal waste bag.
16. Wash hands thoroughly.
17. Dispose of waste following normal cytotoxic waste procedures.
18. Complete an incident report to include all standard information required and also
    a. Drug spilt
    b. Approximate volume
    c. Liquid/powder
19. Inform Occupational Health

Powder spill

1. Call for assistance and warn others
2. Cordon off the area to avoid spreading
3. Do not leave the spill unguard.
4. Obtain the cytotoxic spillage kit.
5. Put the cytotoxic spill sign in place to warn others.
6. From the kit put on:
    a. Respirator mask
    b. Two pairs of nitrile gloves
    c. Safety Glasses
    d. Overshoes
    e. Chemoprotect gown
7. Use water to moisten the absorbent towel.
8. Gently place over the powder and scoop up the powder inside the absorbent towel.
9. Work from the outside of the spill to the inside the spill.
10. Pick up any broken or sharp material with tweezers.
11. Place the absorbent towel or pad and any sharp material in the cytotoxic waste container.
12. Using absorbent towel, clean the spill area with detergent and water at least three times. Use a new section of absorbent towel for each clean and place into the cytotoxic waste container.

13. Treat all waste and personal protective equipment used as cytotoxic.
14. Place all waste into cytotoxic waste container or cytotoxic waste bag.
15. Complete printed label section details on waste bag or waste bin used.
16. Use bag ties to seal waste bag.
17. Wash hands thoroughly.
18. Dispose of waste following normal cytotoxic waste procedures.
19. Complete an incident report to include all standard information required and also
    a. Drug spilt
    b. Approximate volume
    c. Liquid/powder
20. Inform Occupational Health

Reference

1. ASHP Guidelines on Handling Hazardous Drugs, *American Journal of Health-System Pharmacy*, Volume 63, Issue 12, 15 June 2006, Pages 1172–1191,
2. Nabhani Gebara S, Barton S, Appleford I, McCalla P, Sewell G, Sabbagh Dit Hawasli R. Consensus Recommendations for the Safe Handling of Cytotoxic Agents in Cytotoxic Academic Research Laboratories (CARL). J Oncol Pharm Pract. 2020 Dec;26(8):1953-1963.
3. ISOPP Standards for the Safe Handling of Cytotoxics. *Journal of Oncology Pharmacy Practice*. 2022;28(3_suppl):S1-S126.