

CHEMOTHERAPY SPILLS AND SURFACE CONTAMINATION POLICY

PURPOSE

The purpose of this policy is to ensure personal and environmental protection to faculty, trainees/students, and other members of MD Anderson's workforce involved in handling cleanup operations for chemotherapy agents. Following these standard operating procedures will protect individuals from exposure to these hazardous agents. Faculty, trainees/students, and other members of MD Anderson's workforce who are planning to have children or who are pregnant will also reduce their likelihood of exposure to the lowest possible level by following all of the requirements contained in this policy.

POLICY STATEMENT

It is the policy of The University of Texas MD Anderson Cancer Center (MD Anderson) that chemotherapy agents will be administered consistently with this policy, the [Chemotherapy/Biotherapy Policy \(UTMDACC Institutional Policy # CLN0512\)](#), the [Safety Standards for Medication Use Policy \(UTMDACC Institutional Policy # CLN0599\)](#), the [Chemotherapy/Biotherapy Administration and Exposure Control Policy \(UTMDACC Institutional Policy # CLN0973\)](#), and the work instructions issued by Patient Care Prevention and Facilities.

SCOPE

Compliance with this policy is the responsibility of all faculty, trainees/students, and other members of MD Anderson's workforce.

TARGET AUDIENCE

The target audience for this policy includes, but is not limited to, all faculty, trainees/students, and other members of MD Anderson's workforce.

DEFINITIONS

Chemotherapy: Agents or drugs, excluding hormonal agents, that are intended to treat malignancies.

Exposure: Any contact with chemotherapy agents that may carry some health risk. Four potential routes of exposure to chemotherapy agents are inhalation, ingestion, injection, and absorption (through skin and eyes).

Hazard Assessment: A tool used by the employee to evaluate a risk in order to determine necessary protection measures.

Large Spills (> 500cc): A large spill is defined as any incident resulting in a chemotherapy spill of quantities more than 500ml or 500cc. Management of large spills will be coordinated through Environmental Health & Safety (EH&S).

Position Description: A detailed outline of an employee's essential functions and responsibilities, including compliance with applicable institutional policies.

Personal Protective Equipment (PPE): Personal Protective Equipment for hazardous drug handling may include: gowns, gloves, face and eye protection, N95 respirator, and shoe covers. All PPE must be worn in its original state and should not be altered.

Small Spills (less than or equal to 500cc): A small spill is defined as any incident resulting in a chemotherapy spill of quantities less than or equaling 500ml or 500cc. Proper clean up procedures shall be followed as outlined in this document.

PROCEDURE

1.0 Responsibility

- 1.1 All chemotherapy agents must be admixed by the Division of Pharmacy.
- 1.2 Position descriptions of the job categories listed below carry the potential for exposure to chemotherapy agents and, therefore, shall abide by the standards of practice described in this and related policies:
 - A. EH&S:
Large spill cleanup, hazard assessments, guidance on PPE selection and waste management requirements.
 - B. Building Care and Operations:
Handling and disposal of chemotherapy contaminated waste and final cleaning activities.
 - C. Pharmacy:
Admixing of chemotherapy agents, transportation, and clean-up/documentation of spills in pharmacy. All chemotherapy agents prepared will have labels affixed to identify drug as a chemotherapy agent and to alert personnel of necessary precautions.
 - D. RN:
Staff and patient assessment and teaching, clean-up, and documentation of small spills, and administration of chemotherapeutic agent.
 - E. RN, LVN, NA:
Care of the patient receiving chemotherapy.

2.0 Education

- 2.1 Faculty, trainees/students, and other members of MD Anderson's workforce will receive appropriate instruction on (1) the management of chemotherapy agents, (2) overall protection

of faculty, trainees/students, and other members of MD Anderson's workforce, and (3) care of the patient receiving chemotherapy agents according to position descriptions.

- 2.2 Strict adherence to the standard operating procedures and correct use of personal protective equipment within the intended purpose statement of this policy provides overall personal protection of faculty, trainees/students, and other members of MD Anderson's workforce.
- 2.3 Disclosure for the potential of occupational exposure to chemotherapy agents shall be made to all faculty, trainees/students, and other members of MD Anderson's workforce and documented in personnel records.
- 2.4 All private duty, temporary, and contract workforce members will be given information by their respective agency explaining the potential for occupational exposure to chemotherapy agents prior to working at MD Anderson.

3.0 Personal Protective Equipment

- 3.1 To prevent exposure, all cleanup operations require the use of protective garments consisting of gloves, chemotherapy gown, face/eye protection, N95 respirator, and shoe covers. Personal protective equipment should be worn when appropriate and/or when splash exposure is anticipated while performing spill cleanup involving a chemotherapy agent.
- 3.2 Gloves should be disposable, powder-free, labeled, tested for use with chemotherapy drugs, and made of nitrile. Use two pairs, with the outer one covering the gown cuff, whenever there is risk of exposure to hazardous drugs.
 - A. Hands are to be washed thoroughly with soap and water immediately after gloves are removed.
 - B. Gloves are to be replaced after thirty (30) minutes of use, or if the gloves become torn or punctured.
 - C. Extreme care must be taken to avoid puncturing or tearing gloves.
 - D. Please use the MS Word Styles to create the outline.
- 3.3 Chemotherapy gowns should be disposable, nonabsorbent, made of polyethylene-coated polypropylene material, and have a closed front, long sleeves, and elastic or knit closed cuffs. Gowns are not to be worn outside the spill site or work area.
- 3.4 Eye and/or face protection are required when splashing is possible.
- 3.5 A properly fitted NIOSH certified N-95 respirator should be worn whenever there is a risk of airborne particles being produced. If necessary, contact EH&S for assistance with respirator selection. Surgical masks do not provide adequate protection.
- 3.6 Shoe covers are to be worn inside the immediate spill area only when needed. Shoe covers must be removed immediately after spill response is complete.

4.0 Proper Sequence for Donning and Doffing of Personal Protective Equipment

- 4.1 Donning:
 - A. Gloving procedure (inner gloves):

- Select the correct type and size of gloves.
 - Insert hands into gloves.
- B. Chemotherapy gown:
- Select a gown and unfold it so that the opening is toward you.
 - Put arms in sleeves. Hold arms high so that sleeves fall over the arms.
 - Fasten gown.
 - Ensure that inner gloves are under the gown cuff.
- C. Don eye and face protection (when required).
- D. Don shoe covers if needed.
- E. Insert hands into outer gloves and ensure that the gloves cover the gown cuff.

4.2 Doffing:

- A. Remove outer glove from the inside out.
- B. Remove gown from the inside out taking care to avoiding contact with outer surface.
- C. Remove shoe covers if used.
- D. Place all removed PPE into the biohazard container.
- E. Remove inner gloves from the inside out and discard them in the biohazard container.
- F. Remove eye and face protection (when used).
- G. Perform hand hygiene.

5.0 Contamination of PPE, Skin, or Eyes

- 5.1 If a chemotherapy agent comes in contact with the outer set of gloves or if the gloves are punctured or torn:
- A. Remove both sets of gloves immediately.
 - B. Dispose of gloves in a biohazard container.
 - C. Wash hands thoroughly with soap and water. If contamination of skin is suspected, the affected area should be washed for 15 minutes and seek medical attention, if necessary.
 - D. Apply new sets of gloves before proceeding with task.

- 5.2 If chemotherapy gown becomes contaminated with a chemotherapy agent or excreta from a patient receiving chemotherapy, or if it becomes punctured or torn:
- A. Remove gown immediately.
 - B. Dispose of gown in biohazard container.
 - C. Remove outer set of gloves; Place outer gloves in biohazard container.
 - D. Apply new gown before proceeding with task.
 - E. Replace outer set of gloves.
- 5.3 If protective eye wear becomes contaminated with a chemotherapy agent or excreta from a patient receiving chemotherapy:
- A. Remove protective eyewear immediately.
 - B. Remove outer set of gloves; Place outer gloves in biohazard container.
 - C. If contamination of eyes is suspected, flush eyes thoroughly at eyewash station for 15 minutes and seek medical attention, if necessary.
 - D. Place disposable eye protection in a biohazard container.
 - E. Clean and disinfect reusable eye protection for next use, if applicable.
 - F. Apply new eye wear and set of outer gloves before proceeding with task.
- 5.4 When removing protective garments, contact with skin or clothing to outside surface of the garments should be avoided.

6.0 Chemotherapy Preparation Area Surface Decontamination

- 6.1 All areas involved in administering chemotherapy agents will have a specific designated work area for the preparation of chemotherapy agents.
- 6.2 In the event of surface contamination in designated work areas, the following steps should be followed:
- A. Remove absorbent drape from the work area by folding in the corners and rolling drape inward. Place the drape in a biohazard container.
 - B. Clean the area with paper towels and a soap and water solution.
 - C. Disinfect the area with paper towels and a 10% bleach solution, such as Dispatch.
 - D. Dispose of paper towels into a trash container. Reline surface with non-permeable, plastic-backed drapes and label with date and time placed.
- 6.3 The designated work area will have spill kits available and spill procedures posted. Spills must be immediately cleaned up by a workforce member.
- 6.4 See the [Chemotherapy/Biotherapy Policy \(UTMDACC Institutional Policy # CLN0512\)](#) or the [Chemotherapy/Biotherapy Administration and Exposure Control Policy \(UTMDACC Institutional Policy # CLN0973\)](#) for step-by-step instructions regarding administration practices and personal protective equipment requirements.

7.0 Small Spills (500cc or Less)

7.1 Spills on Carpeted Area.

7.2 To manage a small spill (500ml or less) on a carpeted area, complete the following steps:

- A. Cordon off area to prevent spread or further contamination.
- B. Contact The Facilities Operations Center at 713-563-5000 to coordinate the carpet removal by operations and maintenance personnel. Contaminated carpet should be disposed of in biohazard container. If operations and maintenance is unable to remove the carpet, Environmental Health and Safety should be contacted.

7.3 Spills on Non-Carpeted Surface with Chemo Spill Kit:

If spill is on a non-carpeted surface, locate a spill kit available in the area, locate additional supplies (e.g., soap, water, a 10% bleach solution, such as Dispatch and absorbent material) and follow the steps below:

- A. Take out contents of the spill kit. Display the sign that warns others about the spill. Don the PPE following the procedure outlined in 3.1.
- B. Contain spill by laying the Chemosorb pads over the spill. The pads will absorb the liquid and transform it into a gel to assist with disposal.
- C. Caution: Chemosorb gel is extremely slippery when wet. Avoid skin and eye contact and do not inhale.
- D. Cuff both yellow biohazard bags and place on the floor adjacent to spill site.
- E. Detach scoop from scraper and use both to pick up the Chemosorb gel, being careful not to contaminate gloves. Place the gel in one (1) of the waste bags. If there is any broken glass, use the scoop to place it in a sharps container.
- F. Use absorbent pad, soap, and water to pick up any remaining gel. Place the absorbent pad in the same bag.
- G. During cleanup, use only one (1) hand to directly clean the spill area and exposed surfaces.
- H. Use the other hand to touch non-contaminated areas and supplies.
- I. Using the contaminated hand, wipe the area with soap-dampened absorbent pad using an inward, circular motion, cleaning from least contaminated to the most contaminated areas. Use water-dampened absorbent pad to rinse the area.
- J. Repeat this process three (3) times.
- K. Spray a 10% bleach solution (such as Dispatch) on absorbent pad and, using the same inward, circular motion, use it to clean area. Discard contaminated absorbent pad in yellow bag.
- L. Allow the area to air dry for fifteen (15) minutes.
- M. Seal the yellow bag, place it inside of the second yellow bag, and seal it.
- N. Place sealed bags in a biohazard receptacle for disposal.

- O. Following cleanup for all spills, remove PPE following the procedure in 3.2.
- P. Coordinate final cleaning with Building Services, if required.

7.4 Spills on Non-Carpeted Surface without Chemo Spill Kit:

If spill kits are not available in the immediate area, follow the steps below to clean up the spill:

- A. Don PPE following procedure outlined in Section 3.1.
- B. Place blue absorbent pads over the spill area to absorb the bulk of the spill and place the used pads in a biohazard container.
- C. Dampen absorbent pad with warm water and small amounts of soap. Wipe down the contaminated area starting from the outer area of the spill, then working inward to the center of the spill. The used absorbent pad should be placed into a biohazard container. Use water-dampened absorbent pad to rinse the area.
- D. Repeat this process three (3) times.
- E. Spray a 10% bleach solution (such as Dispatch) on absorbent pad and wipe the spill area. Discard the contaminated pads in a biohazard container.
- F. Allow the area to air dry for fifteen (15) minutes.
- G. Place spill debris in a biohazard receptacle for disposal.
- H. Following the clean-up for all spills, remove PPE following the procedure in Section 3.2.
- I. Coordinate final cleaning with Building Services, if required.

8.0 Reporting Small Spill Occurrence

Report all small spill occurrences to the department administrator.

9.0 Large Spills (>500cc)

To manage a large spill (greater than 500ml):

- 9.1 Cordon off area to prevent spread or further contamination.
- 9.2 Contain spill with disposable absorbent material (e.g., linen saver, blue or pink pads).
- 9.3 Contact the Facilities Operations Center at 713-563-5000 to coordinate clean up, removal, and disposal of contaminated material by Environmental Health and Safety.

10.0 Spills of Bodily Fluids Contaminated with Chemotherapy Agents

- 10.1 Patient blood, secretions, and excretions are considered contaminated from the initiation of chemotherapy therapy and for 48 hours post-completion of therapy. Exceptions apply in ambulatory care.
- 10.2 Universal/Standard precautions will be followed for handling of all excreta, linen, etc. from patients receiving chemotherapy.

10.3 For small spills (less than 500cc), follow instructions outlined in Section 5.0. Large spills (>500cc) will be handled by Environmental Health and Safety. Refer to Section 7.0 for triage process.

10.4 Linen that has been indirectly or directly contaminated with a chemotherapy agent (e.g., contaminated with secretions/excretions of patient(s) currently receiving chemotherapy agent or up to 48 hours after therapy is completed) must be placed inside a yellow impervious linen bag prior to being placed in a soiled linen cart. A second yellow impervious bag should be added if leakage is evident through the single use bag.

11.0 Spills on Equipment or Furniture Surfaces

All spill clean-up operations as described apply to spill clean-up and decontamination of equipment such as; IV pumps, IV poles, beds, chairs, and miscellaneous items.

12.0 Monitoring

Monitoring of compliance with this policy will be accomplished by management in areas where chemotherapy agents are used.

13.0 Reporting Occupational Exposure

The employee is responsible for detecting and reporting occupational exposure to chemotherapy agents and/or blood, secretions, or excretion of patients receiving chemotherapy and for 48 hours after discontinuation of chemotherapy.

13.1 Exposure to chemotherapy agents must be reported to Employee Health and Well-Being via the [Employee Accident Report](#).

13.2 Medical Evaluation:

A medical examination may be needed for an employee who has exposure to a chemotherapy agent and who is experiencing acute symptoms such as skin rash/irritation, eye irritation, nausea, or vomiting.

A. For acute exposures requiring immediate medical attention, contact Employee Health and Well-being (713-745-6900) Monday through Friday, 7:30am-4:30pm for instructions regarding evaluation.

B. After hours and on weekends, the exposed employee should report to the Emergency Center for evaluation.

13.3 Personal articles such as clothing must be disposed if decontamination is not possible.

14.0 Spill Response in Patient Rooms

14.1 Spill response for chemotherapy agents in patient rooms should warrant special considerations to the patient and visitors. If possible, relocate patient/visitors to an alternate location during cleanup operations. If a patient cannot be moved, request all visitors to leave the location during cleanup operations. Communicate cleanup operations to the patient as odorous cleaners will be used. Should the patient experience issues, contact Nursing for assistance.

14.2 Any questions regarding potential exposure to patients/visitors should be addressed with on-site physician or individual's primary care physician.

ATTACHMENTS/LINKS

[Employee Accident Report.](#)

[Intravenous Route \(IV\) \(Attachment # ATT1088\).](#)

[IV Push \(IVP\) Route \(Attachment # ATT1090\).](#)

[Oral Route \(Attachment # ATT1087\).](#)

[Personal Protective Equipment and Exposure Control \(Attachment # ATT1873\).](#)

[Subcutaneous or Intramuscular Route \(Attachment # ATT1089\).](#)

[Topical Route \(Attachment # ATT1091\).](#)

[Vesicant Route \(Attachment # ATT1092\).](#)

RELATED POLICIES

[Chemotherapy/Biotherapy Administration and Exposure Control Policy \(UTMDACC Institutional Policy # CLN0973\).](#)

[Chemotherapy/Biotherapy Policy \(UTMDACC Institutional Policy # CLN0512\).](#)

[Safety Standards for Medication Use Policy \(UTMDACC Institutional Policy # CLN0599\).](#)

JOINT COMMISSION STANDARDS / NATIONAL PATIENT SAFETY GOALS

"The hospital manages risks related to hazardous materials and waste." Standard: EC.02.02.01. Comprehensive Accreditation Manual for Hospitals (CAMH), July 2013.

"The hospital plans activities to minimize risks in the environment of care." Standard: EC.01.01.01. Comprehensive Accreditation Manual for Hospitals (CAMH), July 2013.

"The hospital safely manages high alert and hazardous medications." Standard: MM.01.01.03. Comprehensive Accreditation Manual for Hospitals (CAMH), July 2013.

OTHER RELATED ACCREDITATION / REGULATORY STANDARDS

None.

REFERENCES

Anderson, R.W.; Puckett, W. H.; Dana, W. J.; Nguyen, T.V.; Theiss, J.C.; and Matney, T.S.; "Risk of Handling Injectable Antineoplastic Agents," Am J Hosp Pharm 39; 1881-7 (Dec.) 1982.

"Cancer Chemotherapy Guidelines and Recommendations for Practice". Second Edition. Fishman, M and Mrozek-Orlowski M (eds). 1999, Oncology Nursing Press, Inc. Pittsburgh, PA.

Cloak, M. M.; Connor, T. H.; Stevens, K.R.; Theiss, J. C.; Alt, J. M.; Matney, T. S.; Anderson, R. W.; Occupational Exposure of Nursing Personnel to Antineoplastic Agents. *Oncology Nursing Forum*. 12:33-39, (Sept./Oct.) 1985.

Connor, T. H.; Laidlaw, J. L.; Theiss, J. C.; Anderson, R. W.; and Matney, T. S.; "Permeability of Latex and Polyvinyl Chloride Gloves to Carmustine," *Am J Hosp Pharm*. 41:676-679 (April) 1984.

Davis, M. R., "Guidelines for Safe Handling of Chemotherapy Drugs in Pharmacy Department and Hospital Wards (The Society of Hospital Pharmacists of Australia)," *Hosp Pharm* 16:17-20 (Jan.) 1981.

Harrison, B. R., "Developing Guidelines for Working with Antineoplastic Drugs," *Am J Hosp Pharm* 38:1686-93 (Nov.) 1981.

Hitchings, C. R.; Jennings, K.; Knass, A.; Malpas, J. S.; Speechley, V.; and White, A.; "Guidelines for Handling Chemotherapy Drugs," *The Pharmaceutical Journal* 230:230-321 (Feb. 26) 1983.

Hoffman, D. M., "The Handling of Antineoplastic Drugs in a Major Cancer Center," *Hosp Pharm* 15:302-304 (June) 1980.

Knowles, R.S. and Virden, J. E., "Handling of Injectable Antineoplastic Agents," *Brit Med J*, 281:589-91 (Aug. 30) 1980.

Laidlaw, J. L.; Connor, T. H.; Theiss, J. C.; Anderson, R. W.; and Matney, T. S., "Permeability of Four Disposable Protective-Clothing Materials to Seven Antineoplastic Drugs," *Am J Hosp Pharm* 42:2449-2454, (Nov.) 1985.

Laidlaw, J. L.; Connor, T. H.; Theiss, J. C.; Anderson, R. W.; and Matney, T. S., "Permeability of Latex and Polyvinyl Chloride Gloves to A Spectrum of Chemotherapy Drugs," *Am J Hosp Pharm*, 41:2618-2623 (Dec.), 1984.

National Institute of Health, U. S. Department of Health and Human Services, NIH Guidelines For The Laboratory Use of Chemical Carcinogens, May, 1981.

NIOSH Publication No. 2004-165: Preventing Occupational Exposure to Antineoplastic and Other Hazardous Drugs in Health Care Settings, September 2004.

Nursing Procedure Committee: original 6/1984; revised 8/1987; approved by EAC 12/1987; approved by Executive Staff 1/1988; revised 2/1993; reviewed 7/1998; revised 12/12/00, revised 09/20/2001.

Oncology Nursing Society, Cancer Chemotherapy Guidelines and Recommendations For Nursing Education and Practice, 1999.

Selevan, S. G.; Lindbohm, M. L.; Polsei, C.; Hornung, R. W.; and Hemminki, K.; "A Study of Occupational Exposure to Antineoplastic Drugs and Fetal Loss in Nurses." *N Eng J Med* 313:1173-1178, (Nov) 1985.

Stolar, M. H.; Power, L. A.; and Viele, C. S., Procedures For Handling Chemotherapy Drugs (draft of May 1983), Bethesda: American Society of Hospital Pharmacists.

Universal Precautions: Center For Disease Control, Oct. 1987.

The University of Texas, MD Anderson Hospital and Tumor Institute of Houston, Department of Pharmacy. Aseptic Techniques In The Preparation of Antineoplastic Agents, 1-1986.

US Department of Health and Human Services, Public Health Service and National Institutes of Health, Recommendations For The Safe Handling Of Parenteral Antineoplastic Drugs, 1982.

US Department of Labor, OSHA Instruction PUB 8-1.1. Guidelines for Chemotherapy (Antineoplastic) Drugs. Jan. 29, 1986.

Wick C, Slawson, MH, Jorgenson JA, Tyler LS. "Using a closed-system protective device to reduce personnel exposure to antineoplastic agents." Am J Health Syst Pharm. 2003;60(22);2314-20.

Zimmerman, P. F.; Larsen, R. K.; Barkley, E. W.; and Gallelli, J. F.; "Recommendations For Safe Handling of Injectable Antineoplastic Drug Products," Am J Hosp Pharm 38:1693-1695 (Nov.) 1981.

POLICY APPROVAL

Approved With Revisions Date: 12/17/2013

Approved Without Revisions Date:

Implementation Date: 12/17/2013

Version: 23.0

RESPONSIBLE DEPARTMENT(S)

Environmental Health & Safety