Commentary

General Chapter *<800> Hazardous Drugs—Handling in Healthcare Settings*
USP 39–NF 34, First Supplement

February 1, 2016

In accordance with USP's Rules and Procedures of the Council of Experts ("Rules") and except as provided in Section 7.02 Accelerated Revision Processes, USP publishes proposed revisions to the *United States Pharmacopeia and the National Formulary* (*USP–NF*) for public review and comment in the *Pharmacopeial Forum (PF),* USP's free bimonthly journal for public notice and comment. After comments are considered and incorporated as the Expert Committee deems appropriate, the proposal may advance to official status or be republished in *PF* for further notice and comment, in accordance with the Rules. In cases when proposals advance to official status without republication in *PF,* a summary of comments received and the appropriate Expert Committee's responses are published in the Revisions and Commentary section of the USP Web site at the time the official revision is published.

The *Commentary* is not part of the official text and is not intended to be enforceable by regulatory authorities. Rather, it explains the basis of Expert Committees' responses to public comments on proposed revisions. If there is a difference between the contents of the Commentary and the official text, the official text prevails. In case of a dispute or question of interpretation, the language of the official text, alone and independent of the Commentary, shall prevail.

For further information, contact:
USP Executive Secretariat
United States Pharmacopeia
12601 Twinbrook Parkway
Rockville, MD 20852-1790 USA
execsec@usp.org

General Chapter/Section: <800> *Hazardous Drugs—Handling in Healthcare Settings*
Expert Committee: Compounding
No. of Commenters: 142

Sections:

General Comments
Comment Summary #1: The commenters requested that the General Chapter be numbered above 1000 to make it an informational general chapter. Commenters noted that an extended period of time would be needed to implement the General Chapter.
Response: Comment not incorporated. The General Chapter will have a delayed implementation official date of July 1, 2018.
Comment Summary #2: The commenters requested addition of the low-volume exception provided in General Chapter <797> *Pharmaceutical Compounding—Sterile Preparations* that allowed facilities preparing a low volume of hazardous drugs (HDs) to use two tiers of containment and does not require a negative pressure room.
Response: Comment not incorporated. “Low volume” is not well defined and there is a risk of exposure regardless of the volume of HDs compounded.
Comment Summary #3: The commenter requested a summary of requirements to be added.
Response: Comment not incorporated. A summary would not be able to accommodate all the different scenarios and may lead to potential confusion; however, a summary may be developed for a training course.

Comment Summary #4: A commenter suggested including a chart that summarized the "must" requirements and "should" recommendations.
Response: Comment not incorporated. All of the requirements should be understood in the full context of the General Chapter.
Comment Summary #5: The commenters suggested omission of the General Chapter, because there are existing guidance documents available.
Response: Comment not incorporated. Although existing guidance documents have been available, they have not been consistently adopted or followed.
Comment Summary #6: The commenters suggested adding guidance on facilities handling mixtures of HD and non-HDs.
Response: Comment not incorporated. This scenario is already addressed in the Appendix.
Comment Summary #7: The commenter suggested incorporating guidance for investigational HDs.
Response: Comment not incorporated. HDs are classified based on criteria published by NIOSH[1]. Furthermore, investigational drugs may be covered in General Chapter <1168> *Compounding for Investigational Studies* which is currently in development.
Comment Summary #8: The commenter requested addition of restrictions for women who are pregnant, breast feeding, or planning to become pregnant.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #9: The commenters requested a longer implementation time period to allow facilities to make the changes needed to implement the General Chapter requirements.
Response: Comment incorporated. The General Chapter will have a delayed official date of July 1, 2018 which will allow facilities more than two years to implement the General Chapter
Comment Summary #10: The commenters pointed out conflict between the section Hazardous Drugs as in <797> and the proposed <800>.
Response: Comment not incorporated. A revision to General Chapter <797> is currently proposed for public comment. The proposed General Chapter <797> eliminates references to HDs and references General Chapter <800>.
Comment Summary #11: The commenter indicated that entities should not be required to treat drugs as HDs absent guidance from the manufacturer.
Response: Comment not incorporated. HDs are classified based on criteria published by NIOSH. The Expert Committee determined that practice and quality standards for handling HDs are required to minimize exposure to personnel and the environment.
Comment Summary #12: The commenter suggested adding a checklist of all the requirements for <800> to help entities implement the chapter.
Response: Comment not incorporated. The requirements are specified and described in the General Chapter. The Expert Committee determined that a checklist should be entity specific based their facility design and the type of HDs handled.

[1] NIOSH list of antineoplastic and other hazardous drugs in healthcare settings, 2014 Cincinnati, OH: Department of Health and Human Services, CDC; 2014.

1. Introduction and Scope

Comment Summary #1: The commenter requested that the General Chapter allow for alternative approaches to handling the different types of HDs.

Response: Comment not incorporated. The General Chapter allows a risk assessment to determine alternative containment strategies and work practices based on the type of HD and dosage form (see Box 1 Containment Requirements).

Comment Summary #2: The commenter requested an exception to the containment requirements for transferring a liquid HD from vial to bag.

Response: Comment partially incorporated; non-antineoplastics may be addressed under the risk assessment.

Comment Summary #3: The commenter requested allowance for entities to use equivalent or better equipment and technology for handling HDs.

Response: Comment not incorporated. *General Notices 6.30* allows for alternative methods and/or procedures; however, there is currently no guidance on how to determine equivalency or superiority on equipment and technology for handling HDs. This could be addressed in the revision process when more information is known about newer methods or equipment.

Comment Summary #4: The commenter suggested expanding the scope of the General Chapter to include patient homes.

Response: Comment not incorporated. The scope of the General Chapter is intended to include healthcare settings; however, patient homes may be considered in a future revision of the General Chapter.

Comment Summary #5: Commenters requested additional clarification on whether the General Chapter applies to automated refill centers, warehouse stockers, and courier vehicle drivers.

Response: Comment not incorporated. The General Chapter applies to all entities that handle HDs. Examples provided in the General Chapter are not meant to be all inclusive.

Comment Summary #6: The commenter requested clarification regarding handling of HDs.

Response: Comment not incorporated. The General Chapter states that handling includes the receipt, storage, compounding, dispensing, administration, and disposal of sterile and nonsterile products and preparations. The list is not meant to be all inclusive, but is intended to describe instances of handling.

Comment Summary #7: The commenter suggested including an exhaustive list of all instances of handling of HDs and elimination of the phrase “but not limited to.”

Response: Comment not incorporated. It is impractical to list all instances of handling.

Comment Summary #8: The commenter suggested including guidance on enforcement and inspection for compliance with the General Chapter.

Response: Comment not incorporated. USP is a standard-setting organization, guidance on how to enforce and inspect for compliance is outside the scope of the General Chapter.

Comment Summary #9: The commenter suggested expanding the scope of the General Chapter to apply to environmental services, maintenance, and hazardous waste disposal personnel.

Response: Comment not incorporated. The General Chapter applies to all personnel

handling HDs in healthcare settings. Other personnel not handling HDs should follow entity standard operating procedures and other local, state, and federal regulations as appropriate.
Comment Summary #10: The commenters suggested addition of a requirement for entities to maintain a list of HDs that are handled at each individual entity.
Response: Comment incorporated. Requirement for entities to maintain a list of HDs is clarified.
Comment Summary #11: The commenter suggested removing the engineering control requirement from the entity's health and safety management system.
Response: Comment not incorporated. Facility and engineering controls are required as determined by the type of HD and dosage form as well as a risk assessment, if performed.
Comment Summary #12: The commenters suggested clarification of the term "competent personnel."
Response: Comment partially incorporated. Personnel requirements including responsibilities and training are further described in the respective sections.
Comment Summary #13: The commenter requested that the General Chapter apply to drug manufacturers and distributors.
Response: Comment not incorporated. The intent of the General Chapter is to apply to only healthcare settings where HDs are handled.
Comment Summary #14: The commenter suggested that the General Chapter should state whether or not it applies to home healthcare providers.
Response: Comment not incorporated. The General Chapter applies to all healthcare personnel and all entities that handle HD preparations.
Comment Summary #15: The commenter suggested that the scope of the General Chapter should only apply to antineoplastic HDs.
Response: Comment not incorporated. The Expert Committee determined that the General Chapter applies to all HDs as described in section 2 (List of Hazardous Drugs). Entities may perform an assessment of risk for HDs that are not APIs or antineoplastic HDs requiring manipulation.
Comment Summary #16: The commenter requested clarification on whether an infusion center is required to have a compounding pharmacist.
Response: Comment not incorporated. This is outside the scope of the chapter.

2. List of Hazardous Drugs
Comment Summary #1: The commenter suggested that there should be no difference in the containment requirements between handling active pharmaceutical ingredients and final dosage forms of HDs.
Response: Comment not incorporated. There is a higher risk of powder contamination when using API compared to handling of final dosage forms of HDs.
Comment Summary #2: The commenter requested that the General Chapter rely solely on the NIOSH list or provide a consistent and clear mechanism for determining whether a drug is a HD.
Response: Comments incorporated. The General Chapter refers to the NIOSH list and the criteria published by NIOSH to identify HDs.

Comment Summary #3: The commenter suggested removing the reference to the NIOSH for identification of HDs and requested that USP develop a list of HDs.
Response: Comment not incorporated. There is currently no other list of HDs published and development of a new list of HDs is outside the scope of the Compounding Expert Committee.
Comment Summary #4: The commenter noted that the stratification of the NIOSH list of HDs may expose healthcare workers to exposure of HDs that are not antineoplastics.
Response: Comment not incorporated. The General Chapter allows entities to conduct an assessment of risk to determine alternative containment strategies and/or work practices based on the type of HDs. Elements of an assessment of risk is further described in the chapter.
Comment Summary #5: The commenters suggested providing an exception to handling antipsychotic agents which are on the NIOSH list of HDs. Commenters requested that requirements for handling antineoplastics should not apply to other types of HDs.
Response: Comment not incorporated. Entities may perform an assessment of risk for HDs that are not an API or are not an antineoplastic agent.
Comment Summary #6: The commenter requested that further guidance be given on when other drugs should be added to an entity's HD list.
Response: Comment incorporated. The entity's list must be reviewed every 12 months and whenever a new agent or dosage form is used.
Comment Summary #7: The commenters suggested removal of the NIOSH criteria for identifying HDs.
Response: Comment not incorporated. The NIOSH criteria for identifying HDs is most broadly used and accepted.
Comment Summary #8: The commenter suggested adding hematology-based biologics to the list of HDs.
Response: Comment not incorporated. Biologics are outside the scope of this General Chapter.
Comment Summary #9: The commenter suggested modifying the wording to remove the burden of having an entity create its own list. Similarly another commenter suggested having the entity perform risk assessment only on new antineoplastics.
Response: Comment not incorporated. Entities *may* create their own list, but are not required to do so.
Comment Summary #10: A commenter requested that the General Chapter include information on drugs not on the NIOSH list.
Response: Comment not incorporated. The General Chapter defines the criteria used to identify HDs in the glossary and NIOSH further describes the criteria for identifying HDs.
Comment Summary #11: The commenter suggested that the entity based assessment of risk requirement be based on such factors as dosage form, likelihood of exposure, and likely level of exposure.
Response: Comment incorporated.
Comment Summary #12: Commenters asked additional guidance on how to perform an assessment of risk and the documentation required.
Response: Comment not incorporated. The minimum elements of an assessment of

risk are provided in the General Chapter. The assessment of risk is an entity specific approach and should be reviewed at least every 12 months. It is not feasible for the General Chapter to address all the different types of facilities.
Comment Summary #13: The commenter suggested removing antineoplastic from the language surrounding the assessment of risk.
Response: Comment incorporated.
Comment Summary #14: The commenter suggested requiring a review of the entity's list after the addition of any new drug to the formulary.
Response: Comment incorporated.
Comment Summary #15: The commenters indicated that annual review of an entity's list of HDs is too frequent.
Response: Comment not incorporated. A review must be conducted at least annually as new drugs and dosage forms are approved or used in the entity.
Comment Summary #16: The commenter requested clarification on how to document the annual review of an entity's list of HDs.
Response: Comment not incorporated. Documentation requirement should be determined by the entity.
Comment Summary #17: A commenter requested that the General Chapter allow entities to reclassify HDs from the categories determined by NIOSH.
Response: Comment not incorporated. The NIOSH criteria for identification of HDs is most broadly accepted and used. Entities may choose to classify their own list of HDs differently based on their assessment of risk, however, all containment requirements must still be implemented for API and antineoplastic HDs (see Box 1 Containment Requirements).
Comment Summary #18: The commenter suggested removing the distinction between antineoplastic and non-antineoplastic HDs.
Response: Comment not incorporated. Entities may choose not to conduct an assessment of risk and follow all of the containment requirements for all HDs.
Comment Summary #19: The commenter suggested that all non-antineoplastic HDs be exempt from the requirements in the General Chapter.
Response: Comment not incorporated. The General Chapter allows for an assessment of risk for HDs that are not an API and that are not an antineoplastic HD.
Comment Summary #20: The commenter requested clarification about the types of manipulation for non-antineoplastic HDs that could be done outside a negative pressure environment.
Response: Comment not incorporated. This should be addressed in an entity's assessment of risk, if performed. It is outside the scope of the General Chapter to provide all the different types of manipulation that may occur.
Comment Summary #21: The commenters indicated that non-antineoplastic APIs should be subject to entity-based assessment of risk and not required to follow all the containment requirements.
Response: Comment not incorporated. HDs that are APIs pose a risk of contamination to the environment. Power containment is required for handling an API to protect healthcare personnel and the environment.
Comment Summary #22: The commenter requested for clarification of manipulations other than compounding in Box 1.

Response: Comment partially incorporated. The section was clarified to describe manipulation of final dosage forms that may be subject to an entity's assessment of risk.
Comment Summary #23: The commenter suggested expanding the definition of API to include any substance or mixture of substances intended to be used in the compounding of a drug.
Response: Comment not incorporated. The suggestion may lead to further confusion because final dosage forms such as injectables or tablets may be used to compound preparations.
Comment Summary #24: The commenter suggested clarifying the text in Box 1 regarding containment requirements.
Response: Comment incorporated.
Comment Summary #25: The commenter suggested incorporation of other dosage forms of HDs, such as troches and creams, in the General Chapter.
Response: Comment not incorporated. The General Chapter applies to all dosage forms of HDs.
Comment Summary #26: The commenter requested that repackaging be incorporated into Box 1 with other dosage forms that do not require any further manipulation.
Response: Comment incorporated.
Comment Summary #27: The commenter indicated that certain drugs should not be designated as an antineoplastic based on the NIOSH list.
Response: Comment not incorporated. The Expert Committee determined that this was outside the scope of the General Chapter.

3. Types of Exposure
Comment Summary #1: The commenters suggested that routes of exposures in *Table* 1 are the vectors through which a HD can enter the body, and that a more accurate term is opportunities.
Response: Comment incorporated.
Comment Summary #2: The commenter indicated that adding a diluted drug to an intravenous bag should be included as a compounding step.
Response: Comment incorporated.
Comment Summary #3: The commenters indicated that hazardous waste disposal was an opportunity for exposure that should be added.
Response: Comment incorporated.
Comment Summary #4: The commenter suggested excluding compounding activities such as opening capsules from the potential types of exposure.
Response: Comment not incorporated. Opening capsules and other forms of manipulation are compounding activities and pose a potential opportunity for exposure.
Comment Summary #6: The commenter suggested that the text regarding receipt of HDs should include standards for manufacturers to limit risks of exposure to personnel receiving HDs.
Response: Comment not incorporated. This is outside the scope of the General Chapter. The scope of the General Chapter is intended to cover healthcare settings that handle HDs.
Comment Summary #7: The commenter suggested that transport should cover handling of HDs outside of the health system.

Response: Comment not incorporated. This is outside the scope of the General Chapter. The scope of the General Chapter is intended to cover healthcare settings that handle HDs.
Comment Summary #8: The commenter indicated that reconstitution should be considered dispensing and not compounding.
Response: Comment incorporated.

4. Responsibilities of Personnel Handling Hazardous Drugs
Comment Summary #1: The commenters suggested that qualified and trained personnel are not defined.
Response: Comment partially incorporated. It is outside the scope of the General Chapter to define the training and qualification requirements for all personnel that handle HDs. The section on personnel training was further revised for clarity.
Comment Summary #2: The commenters suggested that the designated individual could be shared across sites.
Response: Comment not incorporated. The individual should be designated by the entity and the General Chapter does not encourage or restrict use of the same designated person between sites.
Comment Summary #3: The commenters suggested replacing the term compounding supervisor with a designated person.
Response: Comment incorporated.
Comment Summary #4: The commenter indicated that the General Chapter should specify who the designated person should be.
Response: Comment not incorporated. The designated person should be specific to the entity.
Comment Summary #5: The commenter suggested that the “designated person” should include a “designated group of people.”
Response: Comment not incorporated. The General Chapter does not prohibit designation of multiple individuals. The entity’s policy and procedures should specify the specific responsibilities of each of the designated individuals.
Comment Summary #6: The commenter indicated that the General Chapter should be more specific about designation of an individual.
Response: Comment partially incorporated. The designation of an individual should be based on the entity’s policy and procedures. The responsibilities of the designated individual were clarified in the section.
Comment Summary #7: The commenter suggested that the designated individual should be responsible for minimizing exposure outside of the entity.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary: The commenters requested clarification on continuous monitoring of the facility.
Response: Comment incorporated.
Comment Summary #8: The commenters indicated that it is not possible to effectively sample all HDs.
Response: Comment partially incorporated. The General Chapter does not require

sampling of all HDs. The section on environmental wipe sampling was further revised for clarity.

5. Facilities and Engineering Controls

Comment Summary #1: The commenter indicated that external venting of HDs to the outside may cause environmental pollution.

Response: Comment not incorporated. This is outside the scope of the General Chapter.

Comment Summary #2: The commenter indicated that redundant HEPA filtration of the Containment Primary Engineering Control (C-PEC) for nonsterile compounding would not be effective for liquid or aerosolized HDs.

Response: Comment not incorporated. External venting of the C-PEC is preferred; however, the General Chapter does allow for redundant-HEPA filtration in series for nonsterile compounding.

Comment Summary #3: The commenter stated that refrigerated HDs in their original container should not be subjected to negative pressure, because this is not a requirement of the wholesaler or manufacturer.

Response: Comment partially incorporated. Items such as refrigerated injectable medications need to be stored under refrigeration in a negative pressure room.

Comment Summary #4: The commenters indicated that it is not possible to implement all the required engineering controls and suggested eliminating the requirements.

Response: Comment not incorporated. The engineering controls should be based on the type of HD and dosage form of HD handled at the facility. Engineering controls are required to minimize exposure to HDs.

Comment Summary #5: The commenter requested clarification on which authorized personnel are allowed to access areas where HDs are handled.

Response: Comment not incorporated. Authorized personnel should be described by the entity's policies and procedures.

Comment Summary #6: The commenters indicated that the description of handling areas was unclear and should include patient care areas.

Response: Comment incorporated.

Comment Summary #7: The commenters indicated that the location of HD handling areas away from breakrooms and refreshment was unclear.

Response: Comment not incorporated. The intent of the General Chapter is to separate and locate HD handling areas away from breakrooms and refreshment areas to minimize the potential for exposure to personnel, patients, and visitors.

Comment Summary #8: The commenter suggested prohibiting food and drink from HD handling areas.

Response: Comment not incorporated. This should be addressed by entities policies and procedures.

Comment Summary #9: The commenters indicated that it should not be necessary to have a designated room for unpacking.

Response: Comment not incorporated. The General Chapter does not require a separate room for unpacking of HDs; however, a separate area must be designated for this activity.

Comment Summary #10: The commenter indicated that some facilities only have one

area for receiving and requested that a designation not be required for receipt of HDs.
Response: Comment not incorporated. The General Chapter does not require a separate area for receipt of HDs and non-HDs; however, the area must be neutral/normal or negative pressure.
Comment Summary #11: The commenters suggested that there does not need to be a separate designated area for each activity, but rather a designated area for all HD activities.
Response: Comment partially incorporated. Certain areas are required to be negative pressure to the surrounding area, while other areas may be normal or neutral pressure.
Comment Summary #12: The commenters indicated that it is not possible to know the contents of each shipping container and suggested adding requirements for manufacturers.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #13: The commenter suggested that occasional nonsterile HD compounding should not be allowed in a C-PEC for sterile compounding.
Response: Comment not incorporated. The C-PEC must be decontaminated, cleaned, and disinfected after compounding of nonsterile HD preparations prior to resuming compounding of sterile HD preparations.
Comment Summary #14: The commenter suggested allowing HDs to be stored with other inventory depending on the type of HD and dosage form.
Response: Comment incorporated.
Comment Summary #15: The commenter suggested including information on how frequently the filter needs to be changed on the C-PEC.
Response: Comment not incorporated. This should be based on the filter used and the certification results.
Comment Summary #16: Multiple commenters indicated that a neutral or negative pressure area for unpacking is too onerous and should not be required.
Response: Comment not incorporated. Entities must have a designated area for unpacking antineoplastic and API that is neutral/normal pressure or negative pressure relative to adjacent areas. Most facilities have normal/neutral pressure areas available.
Comment Summary #17: The commenter suggested requiring that drugs that aerosolize at room temperature be unpacked in a negative pressure room.
Response: Comment not incorporated. There is limited information on which drugs may aerosolize at room temperature and entities may not be able to achieve a negative pressure room in the receiving area.
Comment Summary #18: The commenter suggested that it would be best practice to leave HDs in the plastic-wrapped box until it is in the negative pressure area or C-SCA, and then wipe with an appropriate solution.
Response: Comment incorporated.
Comment Summary #19: Commenters requested that the General Chapter allow that the area for receipt and storage may be co-located.
Response: Comment not incorporated. The storage requirements depend on the type of HD and dosage form of the HD. The Expert Committee determined that it is inappropriate to co-locate both of these areas.

Comment Summary #20: The commenter requested that HD may be received and stored in a positive pressure area.
Response: Comment not incorporated. Receipt and storage in a positive pressure area increases the risk of exposure if an accidental spill occurs.
Comment Summary #21: The commenter indicated that the “surrounding areas” needs to be defined.
Response: Comment not incorporated. The “surrounding areas” is intended to refer to the areas surrounding the designated areas in section 5. *Facilities and Engineering Controls*.
Comment Summary #22: The commenter suggested specifying the receipt requirement to apply only to APIs that are HD and not all APIs.
Response: Comment incorporated.
Comment Summary #23: Commenters suggested that the storage of HDs be in normal/neutral pressure rooms.
Response: Comment partially incorporated. The General Chapter allows for an assessment of risk based on the type of HD and dosage form and does not require storage in negative pressure rooms for all HDs. The section was revised for clarity.
Comment Summary #24: The commenters requested clarification on whether the storage area needs to be externally vented.
Response: Comments incorporated.
Comment Summary #25: The commenter suggested allowing HDs to be stored with non-HDs.
Response: Comments incorporated.
Comment Summary #26: Multiple commenters requested that non-antineoplastic HDs be allowed to be stored with non HDs.
Response: Comments incorporated.
Comment Summary #27: The commenters requested the allowance that non-antineoplastic HD APIs be stored with non HDs.
Response: Comment not incorporated. APIs require greater level of control because of the risk of powder contamination.
Comment Summary #28: The commenters suggested allowing storage of antineoplastic HDs separate from non-HDs
Response: Comment incorporated. Final dosage form antineoplastic HDs may be stored with other inventory if permitted by entity policy.
Comment Summary #29: The commenter suggested that HDs should be placed in a plastic bag inside of an additional tote at the time of receipt to prevent cross-contamination, rather than requiring separate storage areas.
Response: Comment not incorporated. Separate storage of different types of HDs is not required. The General Chapter allows storage of certain types of HDs together.
Comment Summary #30: The commenter suggested allowing an option to store HDs in a HEPA filtered or redundant HEPA filtered cabinet.
Response: Comment not incorporated. The Expert Committee determined that there is still a risk of transporting HDs into and out of the storage cabinets, especially if the cabinet is located in a positive pressure area.
Comment Summary #31: The commenter suggested allowing ductless, filtered cabinets for storage of HDs instead of a negative pressure room.

Response: Comment not incorporated. The Expert Committee determined that there is still a risk of transporting HDs into and out of the storage cabinets.
Comment Summary #32: The commenters indicated that it is not possible to store HDs in a manner that prevents spillage or breakage.
Response: Comment not incorporated. The intent of the General Chapter is to minimize the risk of spillage or breakage by using precautions such as secured shelves with raised front lips.
Comment Summary #33: The commenter suggested that 12 air changes per hour (ACPH) should not be required for the storage area.
Response: Comment not incorporated. The ACPH requirement is intended to dilute and remove airborne contaminants.
Comment Summary #34: The commenters indicated that sterile HDs and nonsterile HDs, including diluents, may be stored together.
Response: Comment incorporated.
Comment Summary #35: The commenter requested that refrigerators used for HD storage be placed outside of an area with airflow requirements.
Response: Comment not incorporated. The Expert Committee determined that refrigerated antineoplastic HDs must be stored in a refrigerator located in an area with at least 12 ACPH to dilute and remove airborne contaminants.
Comment Summary #36: The commenter suggested that non-sterile HDs not be required to be stored in a negative pressure room.
Response: Comment partially incorporated. The General Chapter was clarified to allow certain types of HDs be stored with other inventory.
Comment Summary #37: The commenter suggested that the use of refrigerator pass-through be clarified in the General Chapter.
Response: Comment incorporated.
Comment Summary #38: The commenter suggested including a diagram for the ideal placement of refrigerator.
Response: Comment not incorporated. The placement of equipment should be entity-specific.
Comment Summary #39: The commenter indicated final dosage form antineoplastic and antineoplastic APIs should be allowed to be stored together.
Response: Comment incorporated.
Comment Summary #40: The commenter noted that the refrigerator exhaust could generate particulate contamination in the buffer room or C-SCA.
Response: Comment incorporated.
Comment Summary #41: The commenter indicated that water condensation and mold development is possible in refrigerators.
Response: Comment partially incorporated. The entity must establish proper cleaning and disinfecting procedures for all equipment. This is further addressed in General Chapter <797>.
Comment Summary #42: The commenter requested guidance on compounding methotrexate in a community hospital setting.
Response: Comment not incorporated. It is outside the scope of the General Chapter to describe handling procedures for specific HDs.

Comment Summary #43: The commenters requested information on how to handle specific preparations.
Response: Comment not incorporated. It is outside the scope of the General Chapter to describe handling procedures for specific HDs.
Comment Summary #44: The commenter noted that there is a potential for cross-contamination when storing non-antineoplastic HDs with antineoplastic HDs.
Response: Comment partially incorporated. HDs should be stored in a manner to prevent contamination and personnel exposure and should be entity-specific based on the type of HDs and dosage forms handled.
Comment Summary #45: The commenter suggested that venting through high-efficiency particulate air (HEPA) is sufficient and external venting should not be required.
Response: Comment not incorporated. The Expert Committee determined that external ventilation is required for the C-SEC to remove airborne contamination from the room.
Comment Summary #46: The commenters indicated that a separate, externally vented, negative pressure room should not be required for compounding.
Response: Comment not incorporated. The Expert Committee determined that a separate, externally vented negative pressure room should be required to remove airborne contamination, to contain any potential spills, and to minimize exposure to personnel and the environment.
Comment Summary #47: The commenters requested that all external venting of the C-SEC be optional.
Response: Comment not incorporated. External venting is required to remove airborne contamination and minimize exposure to personnel and the environment.
Comment Summary #48: The commenter suggested that compounding antineoplastic HDs should be done in a C-PEC located in a separate negative pressure room, but that all other HDs should be permitted in a negative pressure C-PEC.
Response: Comment partially incorporated. The entity may conduct an assessment of risk to determine alternative containment strategies and/or work practices based on the type of HD and dosage form. Entity policies may require a separate C-PEC and/or C-SEC.
Comment Summary #49: The commenter suggested that each C-PEC be equipped with a continuous monitoring device to confirm air flow.
Response: Comment not incorporated. The Expert Committee will consider this addition in a future revision. Certification of C-PECs are further discussed in General Chapter <797>.
Comment Summary #50: The commenter suggested that there should be instruction on certifying C-PECs or a reference to that information in <797> should be added.
Response: Comment partially incorporated. General Chapter <800> specifies that applicable standards in <797> apply for compounding sterile HDs.
Comment Summary #51: The commenter indicated that the C-PEC should operate continuously if it supplies negative pressure to the C-SEC in order to prevent contamination.
Response: Comment incorporated.
Comment Summary #52: The commenter suggested that the C-PEC should operate continuously even if it supplies some of the negative pressure.
Response: Comment incorporated.

Comment Summary #53: The commenter noted that the description of closed system drug-transfer devices (CSTD) should be consistent with NIOSH publications.
Response: Comment incorporated.
Comment Summary #54: The commenters requested examples of compounding HDs.
Response: Comment not incorporated. Compounding is defined in the glossary and further described in <797> and <795>. The General Chapter applies to compounding of all preparations and it is not practical to include an exhaustive list of examples.
Comment Summary #55: The commenter suggested that the same C-PEC may be used for compounding HD and non-HD sterile preparations.
Response: Comment incorporated.
Comment Summary #56: The commenter requested clarification on whether C-SECs used for nonsterile must go through HEPA filtration.
Response: Comment incorporated.
Comment Summary #57: The commenter indicated that the C-SEC should not be required to be negative pressure if the C-PEC provides vertical flow and is negative pressure.
Response: Comment not incorporated. The Expert Committee determined that a negative pressure C-SEC is required to minimize the risk of HD contamination to personnel and environment, especially during movement of ingredients and preparations into and out of the C-PEC.
Comment Summary #58: The commenter suggested clarifying the negative pressure requirement of 0.01 inch and 0.03 inch of water column to being that relative to the adjacent area.
Response: Comment incorporated.
Comment Summary #59: The commenter suggested that there should not be an upper limit to the negative pressure requirement.
Response: Comment not incorporated. The Expert Committee determined that higher negative pressures have a potential of bringing in microbial and other contamination into the room.
Comment Summary #60: The commenter indicated that it is difficult to maintain a pressure differential below 0.03 inch of water column.
Response: Comment not incorporated. The Expert Committee determined that higher negative pressures have a potential of bringing in microbial and other contamination into the room.
Comment Summary #61: The commenter requested clarification regarding the loss of power to the C-PEC and indicated that consideration should be given to an uninterrupted power source.
Response: Comment incorporated.
Comment Summary #62: The commenters requested more information about the placement of the sink.
Response: Comment incorporated.
Comment Summary #63: The commenter suggested that a handwashing sink may be placed closer than 1 meter from the entrance of the HD buffer room.
Response: Comment not incorporated. The Expert Committee determined that placement of a sink at least 1 meter from the entrance of the HD buffer area is required

to prevent ingress of potential microorganisms from water sources into the sterile compounding area.
Comment Summary #64: The commenter suggested additional clarification for each of the ISO classification systems
Response: Comment not incorporated. The General Chapter refers to <797> which describes the ISO classification systems.
Comment Summary #65: The commenter suggested that the compounding of sterile and nonsterile HDs must be done in separate rooms.
Response: Comment not incorporated. The Expert Committee determined that it is feasible to compound sterile and nonsterile HDs in the same room provided that the C-PECs are located at least 1 meter apart and particle-generating activity is not performed when sterile compounding is in process.
Comment Summary #66: The commenter suggested that it may not be possible to maintain the required ISO classification when a C-PEC for sterile and nonsterile compounding is placed in the same C-SEC.
Response: Comment not incorporated. A C-SEC can be designed so that it will maintain the required ISO classification.
Comment Summary #67: The commenter suggested including the use of dual chamber C-PECs for compounding sterile and nonsterile HDs.
Response: Comment not incorporated. The Expert Committee will consider future revision upon receipt of supporting data on dual chamber C-PECs.
Comment Summary #69: The commenter suggested that double HEPA-filtration of the C-PEC would lead to inadequate airflow.
Response: Comment not incorporated. The Expert Committee determined that it is possible to meet the airflow requirements with double HEPA-filtration.
Comment Summary #70: The commenter indicated that antineoplastic HDs may be compounded in the same C-PEC as other HDs.
Response: Comment partially incorporated. Compounding of the different types of HDs should be dependent on the entity's assessment of risk.
Comment Summary #71: The commenter suggested including hand washing requirements.
Response: Comment not incorporated. The requirements in <795> and <797> apply for compounding nonsterile and sterile compounding, respectively.
Comment Summary #72: The commenter indicated that a C-PEC is not required for handling final dosage forms of HDs such as creams, ointments, and gels.
Response: Comment incorporated.
Comment Summary #73: The commenter indicated that external venting should not be required for the C-SEC.
Response: Comment not incorporated. External venting of the C-SEC is required to eliminate airborne contaminants and prevent recirculation of potential HD contamination.
Comment Summary #74: The commenter suggested that the Containment Ventilated Enclosure (CVE) used for nonsterile compounding does not need to be externally vented nor be equipped with a redundant-HEPA filter.
Response: Comment not incorporated. The Expert Committee determined that externally ventilation or redundant HEPA-filtration is required to eliminate airborne HD contamination and minimize exposure to personnel and the environment.

Comment Summary #75: The commenters suggested that redundant HEPA-filtration should not be required.
Response: Comment not incorporated. The Expert Committee determined that redundant HEPA-filtration is required in the event of a failure or breach in one of the filters.
Comment Summary #76: The commenters indicated that external venting should not be preferred over redundant HEPA filtration.
Response: Comment not incorporated. The Expert Committee felt that external venting is a better option in eliminating airborne HD contamination.
Comment Summary #77: The commenter suggested adding a description of containment ventilated enclosure (CVE).
Response: Comment partially incorporated. CVE is further defined in the Glossary.
Comment Summary #78: The commenters requested clarification on how often "occasional" nonsterile HD compounding may occur in a C-PEC used for sterile compounding.
Response: Comment not incorporated. The Expert Committee could not determine a limit on the number of nonsterile HD preparations that may be compounding in a C-PEC used for sterile compounding. The provision is intended to allow flexibility for entities that primarily compound sterile HDs.
Comment Summary #79: The commenters suggested additional information on the architectural requirements for sterile compounding.
Response: Comment not incorporated. Entities compounding sterile preparations must also implement applicable standards in <797>.
Comment Summary #80: The commenters noted discrepancies between <800> and <797>
Response: Comment not incorporated. General Chapter <797> is currently undergoing revision. The General Chapters will be harmonized.
Comment Summary #81: The commenter recommended clarifying the architectural finish requirements for surfaces in the nonsterile compounding area.
Response: Comment incorporated.
Comment Summary #82: The commenter suggested that a C-PEC containing a pre-filter and a HEPA filter is considered to be redundant filters in series.
Response: Comment not incorporated. The pre-filter is not a HEPA filter. If the redundant HEPA option is used, there must be at least two HEPA filters on the exhaust.
Comment Summary #83: The commenter suggested that external ventilation should not be required for the C-SEC provided there is 12 (ACPH) in the room
Response: Comment not incorporated. The ACPH and external venting requirement is intended to dilute and remove airborne contaminants to remove airborne contamination and minimize exposure to personnel and the environment.
Comment Summary #84: The commenters suggested including specific brands of powder hood that may be used for nonsterile compounding.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #85: The commenter suggested that CVEs should not be required for compounding HDs.

Response: Comment not incorporated. There is a potential for HD contamination during compounding activities. The use of specific C-PECs should be determined by the entity's assessment of risk.
Comment Summary #86: The commenter suggested inclusion of information on sterilization methods in the General Chapter.
Response: Comment not incorporated. This is outside the scope of the General Chapter and is addressed in General Chapter <797>.
Comment Summary #87: The commenter indicated that there are no handwashing requirements in the General Chapter.
Response: Comment not incorporated. Entities compounding sterile preparations must also implement applicable standards in General Chapter <797>.
Comment Summary #88: The commenter indicated that entities preparing a low volume of HDs are not required to have a negative pressure room provided two tiers of containment are implemented.
Response: Comment not incorporated. Low volume is not currently well defined and the Expert Committee determined that there are risks of exposure to HD contamination even when compounding a low volume of HDs.
Comment Summary #89: The commenter indicated that the elimination of the low volume exemption will require time to allow facilities to complete the redesign.
Response: Comment incorporated. An extended implementation period to January 1, 2018, is provided to allow entities to comply with the General Chapter.
Comment Summary #90: The commenter suggested clarifying the description of the two configurations for engineering controls for sterile HD compounding.
Response: Comment incorporated.
Comment Summary #91: The commenters suggested that a laminar airflow workbench (LAFW) must not be used for compounding antineoplastic HDs.
Response: Comment incorporated.
Comment Summary #92: The commenter suggested that an alternative for requiring a C-SEC to have 12 ACPH is for entities to discard unused HD preparations within 12 hours after compounding.
Response: Comment not incorporated. The ACPH requirement is intended to minimize the risk of exposure to HD contamination. The storage time or beyond-use date (BUD) of a sterile preparation is dependent on sterility and stability considerations as described in <797>.
Comment Summary #93: The commenter suggested clarifying the description of the two configuration options allowable for compounding sterile HD preparations.
Response: Comment incorporated.
Comment Summary #94: The commenter suggested that configuration of sterile compounding should also include the ISO classification requirements for the C-PEC.
Response: Comment partially incorporated. Entities compounding sterile HD preparations must also implement the standards in <797>, which describes the environmental quality and control requirements.
Comment Summary #95: The commenter suggested that if the buffer room can maintain ISO Class 7, the ante-room is not required to be ISO Class 7.
Response: Comment not incorporated. The ante-room is required to be ISO Class 7 in order for the ISO Class 7 buffer room to draw in air of equal quality.

Comment Summary #96: The commenter suggested that the positive pressure requirement for the space adjacent to the buffer room should be a minimum of least 0.02 inch of water pressure.
Response: Comment incorporated.
Comment Summary #97: The commenter requested guidance on how an entity may demonstrate HD containment and appropriate environmental control.
Response: Comment not incorporated. Documentation of environmental control and certification is described in the <800> and <797>.
Comment Summary #98: The commenter suggested that the pressure can be controlled from adjoining rooms.
Response: Comment not incorporated. The pressure requirements are intended to contain HD contamination and minimize exposure to personnel and the environment.
Comment Summary #99: The commenter indicated that the sink placement would be difficult to meet.
Response: Comment not incorporated. The Expert Committee determined that a sink is required for handwashing prior to and after compounding HDs. The required placement of at least 1 meter away from the entrance of the HD buffer room or at least 1 meter away from the C-PEC in a C-SCA is required to prevent ingress of potential microorganisms from water sources into the sterile compounding area.
Comment Summary #100: The commenters requested clarification on the location of the sink in relation to the line of demarcation.
Response: Comment not incorporated. The sink must be placed at least 1 meter away from the entrance of the HD buffer room. The exact placement of the sink in the room and in regard to the line of demarcation should be determined by the entity.
Comment Summary #101: The commenter suggested that the sink should be optional and personnel should be allowed to use hand sanitizer instead.
Response: Comment not incorporated. Personnel compounding sterile HDs must wash their hands with soap and water prior to and after compounding.
Comment Summary #102: The commenter suggested clarifying the requirement for placement of the sink in the sterile compounding area.
Response: Comment incorporated.
Comment Summary #103: The commenter recommended allowing sterile HD and non-HD to be compounded in the same C-PEC after cleaning and decontamination procedures.
Response: Comment not incorporated. The General Chapter already allows the Biologic Safety Cabinets (BSC) and Compounding Aseptic Containment Isolator (CACI) used for compounding HDs for the compounding of non-HDs provided that the entity takes certain precautions.
Comment Summary #104: Commenters indicated that it was unclear how to handle HDs and non-HDs in the same preparation.
Response: Comment not incorporated. A preparation is considered an HD if it contains any ingredient that meets the criteria described in the General Chapter and NIOSH publications.
Comment Summary #105: The commenter suggested it was inappropriate to compound non-HDs, such as intravenous immunoglobulin, in the same C-PEC used for compounding antineoplastic HDs.

Response: Comment not incorporated. The Expert Committee determined that this should be determined by entity-specific policies and procedures.
Comment Summary #106: The commenter indicated it was inappropriate to compound non-antineoplastic HDs in a LAFW.
Response: Comment not incorporated. The Expert Committee determined that this should be determined by entity-specific policies and procedures and should be based on an assessment of risk, if performed by the entity.
Comment Summary #107: The commenter suggested that non-HDs prepared in a C-PEC used for HD compounding should not be required to be labeled to require PPE handling requirements.
Response: Comment not incorporated. The Expert Committee determined that there is a potential for trace contamination on packaging of non-HDs prepared in a C-PEC used for HD compounding.
Comment Summary #108: The commenter recommended clarifying the requirements for the Containment Segregated Compounding Area (C-SCA) for compounding sterile HDs.
Response: Comment incorporated.
Comment Summary #109: Multiple commenters indicated that the maximum BUDs were inconsistent with General Chapter <797>.
Response: Comment partially incorporated. The BUD was revised to refer to General Chapter <797>.
Comment Summary #110: The commenter suggested removing the cross-reference to <797>.
Response: Comment not incorporated. Entities compounding sterile HDs must also implement the practice and quality standards in General Chapter <797> to prevent harm to patients.
Comment Summary #111: The commenter suggested that garbing and degarbing in negative pressure room would make maintenance of the required ISO classification difficult based on particulates generated.
Response: Comment not incorporated. Donning and doffing may be done in the ante-room. However, if the negative pressure HD buffer room is entered through a positive-pressure non-HD buffer room, garbing and degarbing must be done within the negative-pressure room to avoid spreading of HD contamination.
Comment Summary #112: A commenter requested clarification of garbing and degarbing requirements in the anteroom and in the buffer room.
Response: Comment not incorporated. Garbing and degarbing procedures and requirements should be determined by the entity.
Comment Summary #113: The commenter suggested changing the terminology of garbing and degarbing to donning and doffing.
Response: Comment incorporated.
Comment Summary #114: The commenter suggested that refrigerated pass-throughs should be allowed.
Response: Comment not incorporated. The Expert Committee determined that there was a high risk of microbial contamination of surfaces within the pass-through and there is a potential for microbial ingress into the negative pressure area during the transfer of ingredients.

Comment Summary #115: The commenters indicated that the C-SCA should not be required HEPA filtered supply air.
Response: Comment incorporated.
Comment Summary #116: The commenter suggested removing the negative pressure requirement for the C-SEC.
Response: Comment not incorporated. The Expert Committee determined that negative pressure is necessary to contain any HD contamination and minimize exposure in event of a spill.
Comment Summary #117: The commenter suggested that the configuration with a C-SCA should be preferred.
Response: Comment not incorporated. There are two options for configuration of a sterile compounding facility. An entity should select the configuration based on the type of compounding performed and the maximum BUD needed.
Comment Summary #118: The commenters requested procedures to determine the appropriate performance outcomes and selection of Closed System Drug-Transfer Devices (CSTDs).
Response: Comment not incorporated. This is outside the scope of the General Chapter. NIOSH has published for public comment a protocol to evaluate CSTDs. The Expert Committee will consider revisions to the General Chapter once the protocol is developed.
Comment Summary #119: The commenter suggested that CSTDs should not be required for administration of all HDs.
Response: Comment partially incorporated. The General Chapter was revised to require CSTDs when administering antineoplastic HDs when the dosage form allows.
Comment Summary #120: The commenter suggested that the statement regarding CSTDs performance should be deleted.
Response: Comment partially incorporated. The section was clarified.
Comment Summary #121: The commenter suggested that the FDA classification of CSTDs should be considered the same as performance standards.
Response: Comment not incorporated. The Expert Committee determined that the FDA classification of CSTDs is not equivalent to performance standards needed for evaluation of containment of HDs.
Comment Summary #122: The commenters requested clarification on when CSTDs are required for administration of HDs.
Response: Comment partially incorporated. The section was clarified. CSTDs are required for administration of antineoplastic HDs when the dosage form allows. Certain dosage forms, for example tablets and capsules, are not conducive to the use of CSTDs.
Comment Summary #123: The commenter suggested requiring use of a CSTD instead of requiring the C-PEC to be externally vented.
Response: Comment not incorporated. CSTDs provide adjunct control during compounding or administration of an HD; however, the Expert Committee determined that external venting of the C-PEC is still required to minimize the risk of exposure. Additionally, certain dosage forms and APIs do not permit the use of CSTDs.
Comment Summary #124: The commenter indicated that compounding HDs with a CSTD does not require a negative pressure room if only a narrow range of HDs are compounded.

Response: Comment not incorporated. CSTD provide adjunct control during compounding; however, additional controls are needed to prevent HD contamination, especially during the movement of ingredients and materials into and out of the C-PEC. A negative pressure room also provides an additional level of containment in the event of an accidental spill.

6. Environmental Quality and Control

Comment Summary #1: The commenters suggested removing the recommendation for using wipe kits for environmental sampling.
Response: Comment not incorporated. The General Chapter recommends performing environmental wipe sampling. The intent of describing the wipe sampling kits is to recommend verification before use.
Comment Summary #2: The commenter indicated that there are no environmental sampling companies that sample for hormones.
Response: Comment not incorporated. Environmental wipe sampling is currently recommended and not required for each type of HD handled.
Comment Summary #3: The commenter indicated that wipe sampling should not be required if a CSTD is used.
Response: Comment not incorporated. The Expert Committee determined that there is still a potential for HD contamination even with the use of CSTDs. Environmental wipe sampling is currently recommended and not required for each type of HD handled.
Comment Summary #4: The commenters recommended inclusion of guidance for evaluating companies offering environmental wipe sampling.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #5: The commenter suggested clarifying that environmental wipe sampling should be specific for HD surface residue.
Response: Comment incorporated.
Comment Summary #6: The commenter indicated that the detection of a HD on environmental sampling does not necessarily imply a safety hazard.
Response: Comment not incorporated. Environmental sampling is recommended and the action level depends on the type of measurable contamination detected. Because there is currently no standard for acceptable limits for HD surface contamination, environmental wipe sample is recommended, but not required.
Comment Summary #7: The commenter suggested that the environmental wipe sampling should be performed by a safety and health professional.
Response: Comment partially incorporated. The entity should determine who performs the environmental wipe sampling.
Comment Summary #8: The commenters suggested including more information on the type of information that should be documented and trended for environmental sampling.
Response: Comment not incorporated. Documentation and trending procedures should be established by the entity and may depend on the type of HDs handled and sampled.
Comment Summary #9: A commenter suggested recommending the use of an American Industrial Hygiene Association-accredited laboratory.
Response: Comment not incorporated. The Expert Committee determined that it was

outside the scope of the General Chapter to recommend a particular accreditation organization.
Comment Summary #10: The commenters requested definitions for “contamination” and “measurable contamination” for evaluating environmental wipe sampling.
Response: Comment not incorporated. Because there is currently no standard for acceptable limits for HD surface contamination, environmental sampling is a recommendation and not a requirement. The Expert Committee will consider future revisions to this section once more information becomes available.
Comment Summary #11: The commenter suggested that environmental sampling is not required for non-antineoplastic HDs.
Response: Comment not incorporated. Environmental sampling is a recommendation and should be based on the entity’s health and safety management system.
Comment Summary #12: The commenter suggested removing the equipment and locations recommended for environmental surface sampling.
Response: Comment not incorporated. Environmental sampling is a recommendation and should be based on the entity’s health and safety management system. The list of equipment and locations are intended to provide an example.
Comment Summary #13: The commenter suggested that environmental surface sampling should not be required for “patient administration areas.”
Response: Comment not incorporated. There is a risk of HD surface contamination in patient care areas.
Comment Summary #14: The commenter indicated that the EMA guidelines on genotoxic impurities are different than the example thresholds for surface contamination provided in the General Chapter.
Response: Comment not incorporated. The threshold limits for HD surface contamination is intended to serve as an example.
Comment Summary #15: The commenter suggested that the threshold level for HD surface contamination be footnoted and referenced.
Response: Comment not incorporated. The threshold limits for HD surface contamination is intended to serve as an example and the reference is provided in the references.

7. Personal Protective Equipment (PPE)
Comment Summary #1: The commenter suggested that no additional level of PPE protection should be required for nonsterile HDs
Response: Comment partially incorporated. The Expert Committee determined there was a risk of exposure when handling nonsterile HDs. PPE requirements should be based on guidance provided by NIOSH, the entity’s policy and procedures, and the entity’s occupational safety plan and assessment of risk, if performed.
Comment Summary #2: The commenters indicated that requirements for PPE should be consistent with NIOSH and OSHA recommendations.
Response: Comment partially incorporated. The General Chapter refers to the NIOSH publication for general guidance on PPE.
Comment Summary #3: The commenters suggested that scenarios requiring PPE not described in the NIOSH publication should be based on the entity’s occupational plan and assessment of risk.

Response: Comment incorporated.
Comment Summary #4: The commenter suggested reference to 29 Code of Federal Regulations (CFR) 1910 for PPE requirements.
Response: Comment incorporated.
Comment Summary #5: The commenter suggested inclusion of an appendix list of PPE requirements for all the different HD handling scenarios.
Response: Comment partially incorporated. The General Chapter refers to the NIOSH list of antineoplastic and other HDs which provides a list of PPE requirements for possible handling scenarios that may be encountered in healthcare settings.
Comment Summary #6: The commenter suggested that emphasis should be placed on personnel education and training instead of requiring PPE.
Response: Comment not incorporated. The Expert Committee determined that both training and PPE are required for minimizing HD exposure to personnel.
Comment Summary #7: The commenter suggested that the outer chemotherapy glove used for sterile compounding must be sterile.
Response: Comment incorporated.
Comment Summary #8: The commenter indicated that head covers are not required when using a CACI.
Response: Comment partially incorporated. PPE requirements should be based on the type of activity and HD handled and should follow guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed. Additionally, entities must also follow applicable PPE requirements in <795> and <797> for nonsterile and sterile compounding, respectively.
Comment Summary #9: The commenter suggested that beard and hair covers are intended for protecting preparations from particles shed by personnel rather than protecting personnel from contact with HDs.
Response: Comment not incorporated. The Expert Committee determined that beard and hair covers serve both to prevent contamination of the CSP and personnel contact with HDs.
Comment Summary #10: The commenter suggested that additional PPE should be required for handling antineoplastic HDs within a CACI.
Response: Comment not incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed. Additionally, entities must also follow applicable PPE requirements in <795> and <797> for nonsterile and sterile compounding, respectively.
Comment Summary #11: The commenter suggested requiring a mask or respirator when compounding HD powders and eye protection when compounding with HD liquids.
Response: Comment incorporated.
Comment Summary #12: Commenters suggested that PPE should not be required for receipt, storage, and transport of HDs.
Response: Comment not incorporated. The Expert Committee determined that there are risks of HD exposure during the receipt, storage, and transport of HDs, especially in the event of an accidental spill. PPE requirements for these activities should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.

Comment Summary #13: The commenter suggested including the types of gowns and gloves required.
Response: Comment not incorporated. The type of gloves and gowns required are described in section 7.1 and 7.2 of the chapter.
Comment Summary #14: The commenters requested additional information about the type of PPE required for each activity.
Response: Comment partially incorporated. The General Chapter refers to the NIOSH list of antineoplastic and other HDs which provides a list of PPE requirements for possible handling scenarios that may be encountered in healthcare settings.
Comment Summary #15: The commenter requested inclusion of PPE requirements for couriers and commercial transport companies.
Response: Comment not incorporated. This is outside the scope of this General Chapter.
Comment Summary #16: The commenters suggested PPE should be required for waste disposal.
Response: Comment incorporated.
Comment Summary #17: A commenter suggested listing the PPE required for compounding in a compounding aseptic isolator (CAI) and CACI.
Response: Comment partially incorporated. In addition to General Chapter <800>, entities must also follow applicable PPE requirements in <797> for sterile compounding. PPE requirements should be based on the type of activity and HD handled and should follow guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.
Comment Summary #18: The commenter suggested that PPE should not be required for handling non-antineoplastic HDs when the risk of physical contact is minimal.
Response: Comment partially incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.
Comment Summary #19: The commenters indicated that two pairs of chemotherapy gloves are required for compounding and administration of HDs.
Response: Comment incorporated.
Comment Summary #20: The commenter suggested explanation on when gloves should be changed.
Response: Comment incorporated.
Comment Summary #21: The commenter suggested that hands must be washed with soap and water after removing gloves.
Response: Comment incorporated.
Comment Summary #22: The commenter recommended adding text stating the need to reduce active and passive transfer of hazardous residues.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #23: The commenters suggested defining when chemotherapy gloves are required.
Response: Comment not incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.

Comment Summary #24: The commenter suggested clarification on whether entities needed to test gloves.
Response: Comment incorporated.
Comment Summary #25: The commenter suggested that the gloving requirement be consistent with the requirements in NIOSH.
Response: Comment incorporated.
Comment Summary #26: The commenter noted that powder free gloves should be required in order to limit the spread of microbial contamination rather than the potential for powder to adsorb and retain HDs.
Response: Comment incorporated.
Comment Summary #27: Several commenters indicated that the requirement to change gloves every 30 minutes did not account for preparations that took longer than 30 minutes to compound.
Response: Comment incorporated.
Comment Summary #28: The commenter suggested that gowns must not be reused.
Response: Comment incorporated.
Comment Summary #29: The commenters suggested some clarifications regarding gowning requirements.
Response: Comment partially incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.
Comment Summary #30: The commenter suggested gowning requirements should be based on the recommendations from CACI and CAI manufacturers.
Response: Comment partially incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed. Additionally, entities must also follow applicable PPE requirements in <795> and <797> for nonsterile and sterile compounding, respectively.
Comment Summary #31: Several commenters indicated that gowns do not need to be changed every 2 to 3 hours.
Response: Comment not incorporated. Gowns must be changed according to the manufacturer's information. If no information is available from the manufacturer, gowns must be changed every 2 to 3 hours to minimize the risk of HD permeation through the gown.
Comment Summary #32: The commenters indicated that a second pair of shoe covers should not be required.
Response: Comment not incorporated. The Expert Committee determined that two pairs of shoe covers are required to avoid the spread of HD contamination to other areas.
Comment Summary #33: The commenter suggested using dedicated disinfected cleanroom shoes instead of shoe covers.
Response: Comment not incorporated. The Expert Committee determined that disposable shoe covers are required to avoid the spread of HD contamination.
Comment Summary #34: The commenters suggested changing the reference to buffer room to C-SEC as related to the head, hair, shoe and sleeve covers.
Response: Comment incorporated.

Comment Summary #35: The commenters suggested removal of the requirement to use sleeve covers constructed of coated materials.
Response: Comment incorporated.
Comment Summary #36: The commenter suggested that head, hair, shoe, and sleeve covers should be optional for non-antineoplastic HDs.
Response: Comment partially incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed. Additionally, entities must also follow applicable PPE requirements in <795> and <797> for nonsterile and sterile compounding, respectively.
Comment Summary #37: The commenter suggested including instruction for washing non-disposable clothing.
Response: Comment incorporated.
Comment Summary #38: The commenter recommended adding a table that outlines the requirements for eye and face protection.
Response: Comment not incorporated. The General Chapter refers to the NIOSH list of antineoplastic and other HDs which provides a list of PPE requirements for possible handling scenarios that may be encountered in healthcare settings.
Comment Summary #39: The commenter suggested deleting the requirement to fit test respirators.
Response: Comment not incorporated. The Expert Committee determined that respirators must be fit tested to ensure proper fit and adequate protection against HD exposure.
Comment Summary #40: The commenters requested clarification on when eye and face protection is required.
Response: Comment partially incorporated. Eye and face protection must be worn when there is a risk for spills or splashes when working outside of a C-PEC. The General Chapter refers to the NIOSH list of antineoplastic and other HDs which provides a list of PPE requirements for possible handling scenarios that may be encountered in healthcare settings.
Comment Summary #41: The commenter indicated that goggles restrict peripheral vision and recommended deleting that requirement.
Response: Comment not incorporated. The Expert Committee determined that googles are required to protect the eyes from potential splashes of HD. Eye and face protection must be worn when there is a risk for spills or splashes when working outside of a C-PEC.
Comment Summary #42: The commenter suggested removal of the reference to CDC's Respirator Trusted-Source Information.
Response: Comment not incorporated. Reference to CDC's Respirator Trusted-Source Information is intended to provide additional background information.
Comment Summary #43: Commenters suggested adding clarification on when respiratory protection should be used for unpacking containers that are not contained in plastic.
Response: Comment partially incorporated. Containers packed in plastic such as clear plastic bags allow personnel who are receiving the HD to inspect for breakage or spillage.

Comment Summary #44: The commenter suggested that manufacturers should be required to take precautions when shipping HDs.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #45: The commenter suggested clarification on when respiratory protection is required.
Response: Comment incorporated.
Comment Summary #46: The commenters indicated that a respirator should not be required when opening a package, because the internal contents may be unknown at the time of receipt.
Response: Comment partially incorporated. Respiratory protection is recommended because of the potential for breakage and spillage during transport; however, not required. Furthermore, PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.
Comment Summary #47: The commenters indicated that a cartridge respirator was unnecessary for unpacking HDs.
Response: Comment partially incorporated. Respiratory protection with a multi-gas cartridge and P100-filter is recommended because of the potential for breakage and spillage during transport, however, not required.
Comment Summary #48: The commenter indicated that a powered air purifying respirator (PAPR) should be an option when there is a risk of respiratory exposure.
Response: Comment incorporated.
Comment Summary #49: The commenter suggested that respiratory protection should be the same regardless of the size of a spill.
Response: Comment not incorporated. The Expert Committee determined that larger spills have a higher risk of exposure to personnel and that a PAPR provides more protection to the personnel.
Comment Summary #50: The commenter suggested that respiratory protection should be recommended when decontaminating and cleaning the C-PEC.
Response: Comment incorporated.
Comment Summary #51: The commenter indicated that used PPE may be disposed of as trace contaminated waste.
Response: Comment incorporated.
Comment Summary #52: The commenters suggested adding a definition for waste containers approved for contaminated waste.
Response: Comment not incorporated. This is outside the scope of the General Chapter and should be based on entity policy and procedures. Disposal must also comply with applicable federal, state, and local regulations.
Comment Summary #53: The commenter requested clarification on where PPE may be disposed.
Response: Comment incorporated.
Comment Summary #54: The commenter indicated that contaminated PPE must be immediately discarded.
Response: Comment incorporated.

Comment Summary #55: The commenter suggested clarification on when clothing may be potentially contaminated and may not be taken home.
Response: Comment not incorporated. Clothing is considered to be potentially contaminated when there is suspected or possible contact with a HD or HD contaminated surfaces.
Comment Summary #56: The commenter indicated that PPE may be disposed of regularly when handling non-antineoplastic HDs.
Response: Comment partially incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.
Comment Summary #57: The commenter suggested further guidance on disposal of used PPE.
Response: Comment incorporated.
Comment Summary #58: The commenter noted that a description of reusable PPE should be added.
Response: Comment not incorporated. PPE requirements should be based on guidance provided by NIOSH, the entity's policy and procedures, and the entity's occupational safety plan and assessment of risk, if performed.

8. Hazard Communication Program
Comment Summary #1: The commenter suggested clarifying the requirements regarding a hazard communication program.
Response: Comment partially incorporated. An entity's hazard communication program should be individualized to each entity based on the facility, personnel, and type of HD handled. The section is intended to provide the minimum required elements of a hazard communication program.
Comment Summary #2: The commenter suggested clarifying whether the term "hazardous chemical" is synonymous with HD.
Response: Comment partially incorporated. HDs that are considered hazardous chemicals are subject to the requirements of the hazard communication program.
Comment Summary #3: The commenters requested that Safety Data Sheets (SDS) may be maintained electronically.
Response: Comment not incorporated. The General Chapter does not require nor prohibit the use of electronic SDSs. Entities should follow applicable federal, state, and local regulations regarding documentation requirements.
Comment Summary #4: The commenter indicated that personnel of reproductive capability must acknowledge the risk of handling HDs.
Response: Comment incorporated.
Comment Summary #5: The commenter suggested that standard operating procedures should also be developed for disposal of HDs.
Response: Comment incorporated.
Comment Summary #6: The commenter suggested including a reference to 29 CFR 1920.1200
Response: Comment incorporated.

Comment Summary #7: The commenter suggested that entities handling non-antineoplastic HDs in unit dose packaging, manufacturer containers, or containers designed for administration to a single patient should not be required to have a hazardous communication program.
Response: Comment not incorporated. The Expert Committee determined a hazard communication program is required for all HDs to ensure effective training and protection for personnel.

9. Personnel Training
Comment Summary #1: The commenter suggested adding training requirement for disposal of HDs.
Response: Comment incorporated.
Comment Summary #2: The commenter requested clarification on the frequency of competency assessments and the type of competency assessments required.
Response: Comment partially incorporated. The General Chapter was revised to specify when training would be required. The type of competency assessment determined by the facility and should be based on the type of activities performed and the types of HDs handled.
Comment Summary #3: The commenter suggested clarification on when training needs to be performed when a new HD is introduced.
Response: Comment incorporated.
Comment Summary: The commenters indicated that the personnel training requirements are the same as those required by organizations such as the Joint Commission and OSHA.
Response: Comment not incorporated. General Chapter <800> provides the minimum training requirements, entities may incorporate additional requirements.
Comment Summary #4: The commenters requested removal of the term “fully trained” to describe personnel.
Response: Comment incorporated.
Comment Summary #5: The commenters requested clarification on the training requirements when a new HD is added to an entity’s list of HD.
Response: Comment incorporated.
Comment Summary #6: The commenter suggested adding administration as an example of functions in which personnel must have training.
Response: Comment incorporated.
Comment Summary #7: The commenter suggested that the training requirement for the addition of a new HD to an entity’s list should be broader in scope and only require additional training if a new class of HD is used or the training requirement should be specific for the new HD and not the entire list of HDs.
Response: Comment partially incorporated. There is currently no classification system for HDs to determine when training should occur. The specific training required should be based on the entity’s policies and procedures and should be determined by the particular HD added to the entity’s list.
Comment Summary #8: The commenters suggested that the frequency of competency assessments should be no greater than every 12 months absent of any significant

change in process. Competency assessments should not be required whenever a new HD is added to the entity's list.
Response: Comment incorporated.
Comment Summary #9: The commenter suggested that the training requirements should include appropriate work practices.
Response: Comment partially incorporated. Work practices should be included in the entity's standard operating procedures for handling HDs.
Comment Summary #10: The commenter suggested the training requirements should include proper disposal of HDs and associated PPE.
Response: Comment incorporated.

10. Receiving
Comment Summary #1: The commenter suggested that appropriate PPE must be worn during receipt of HDs, because containers and outer packaging of HDs have been shown to contain HD residues.
Response: Comment incorporated.
Comment Summary #2: The commenter noted that entities must have policies and procedures in place for receipt of damaged or broken HD containers.
Response: Comment incorporated.
Comment Summary #3: The commenter indicated that the PPE requirement for receiving differs from that described in Section 7.
Response: Comment incorporated.
Comment Summary #4: The commenters suggested extending the standards to apply to wholesalers, suppliers, and manufacturers.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #5: The commenter suggested clarifying the summary of requirements for receiving and handling damaged HD shipping containers.
Response: Comment incorporated.
Comment Summary #6: The commenters indicated that only antineoplastic HDs must be sealed in impervious plastic containers or bags.
Response: Comment not incorporated. Plastic impervious containers are recommended to minimize the risk of contamination during receipt and transfer within the entity; however, it is not required.
Comment Summary #7: The commenter suggested that HDs must be delivered to the storage area after unpacking and not upon arrival.
Response: Comment incorporated.
Comment Summary #8: The commenters suggested that HDs must be delivered to the HD storage area as soon as possible and not immediately upon arrival.
Response: Comment partially incorporated. HDs must be delivered to the HD storage area after unpacking.
Comment Summary #9: The commenter suggested clarifying when gloves are required when handling sealed containers of HDs.
Response: Comment partially incorporated. Chemotherapy gloves must be worn when unpacking HDs. Additional PPE requirements are described in section 7 of the General Chapter.

Comment Summary #10: The commenter suggested allowing the entity's SOPs to determine the type of gloves required when receiving HDs.
Response: Comment not incorporated. The Expert Committee determined that ASTM tested chemotherapy gloves must be worn to protect personnel from exposure to HDs.
Comment Summary #11: The commenter suggested that HDs that will be returned to the supplier should be segregated in a designated negative pressure area.
Response: Comment incorporated.
Comment Summary #12: The commenters suggested that damaged vials and other containers of HDs should be disposed of as hazardous waste.
Response: Comment incorporated.
Comment Summary #13: The commenter noted that some entities do not have C-PECs available for opening damaged shipping containers.
Response: Comment partially incorporated. A C-PEC is required for opening damaged shipping containers. However, if a C-PEC is not available, the entity should contact the supplier and/or dispose of the damaged container as hazardous waste.
Comment Summary #14: The commenters suggested that the General Chapter should specify the type of wipe and agent to use for wiping the outside of the undamaged item.
Response: Comment not incorporated. The undamaged item must be wiped with a disposable wipe. The agent to be used should be based on the type of HD and the entity's policy. The Expert Committee determined that the physical action of wiping is more important in removing residual contaminants than the specific agent.
Comment Summary #15: The commenters asked for clarification regarding the return of apparently damaged packages.
Response: Comment partially incorporated. Entities should contact the supplier regarding returns of damaged containers of HDs.
Comment Summary #16: The commenter indicated that a damaged container may not fit inside of a C-PEC.
Response: Comment partially incorporated. A C-PEC is required for opening damaged shipping containers. However, if a suitable C-PEC is not available, the entity should contact the supplier and/or dispose of the damaged container as hazardous waste. Additionally, the containment requirements should be determined by an entity's assessment of risk, if performed.
Comment Summary #17: The commenter suggested that the receiving requirements should not apply to non-antineoplastic HDs.
Response: Comment not incorporated. The containment requirements should be determined by the entity's assessment of risk, if performed.

11. Labeling, Packaging, Transport, and Disposal
Comment Summary #1: The commenter suggested that packages of HDs must be labeled by the wholesaler or manufacturer to require special HD handling precautions.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #2: The commenter suggested adding text regarding disposal of HDs and other contaminated items.
Response: Comment incorporated.
Comment Summary #3: The commenter suggested that designated areas must be

available for collecting and storing HD waste and for sorting bulk and trace contaminated items for disposal.
Response: Comment not incorporated. Entities may designate areas for disposal however; they must comply with applicable federal, state, and local regulations for disposal.
Comment Summary #4: The commenters recommended the addition of disposal to this section.
Response: Comment incorporated.
Comment Summary #5: The commenter requested clarification on which HDs must be labeled with handling requirements.
Response: Comment not incorporated. The entity should identify the HDs that require special HD handling precautions and must label them appropriately. This should also be evaluated as part of the entity's assessment of risk, if performed.
Comment Summary #6: The commenters suggested that the labeling requirements should be consistent with OSHA requirements.
Response: Comment incorporated.
Comment Summary #7: The commenters suggested limiting the requirements for labeling, packaging, and transport should apply to suppliers and manufacturers.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #8: The commenter suggested clarification on the types of shipping containers that would be appropriate for packaging HDs.
Response: Comment not incorporated. The type of shipping container should be determined by the entity and should be based on the type of HD, product specifications and requirements, and the mode of transport.
Comment Summary #9: The commenters suggested that pneumatic tubes should be allowed for transporting all HDs.
Response: Comment partially incorporated. Pneumatic tubes must not be used for any liquid HDs or any antineoplastic HDs, because of the potential for breakage and contamination during transport. A risk assessment may be performed for use of pneumatic tubes for other types of HDs.
Comment Summary #10: The commenter suggested that the General Chapter should specify the type of containers to be used for transport that minimizes the risk of breakage or leakage.
Response: Comment not incorporated. The type of container should be determined by the entity and should be based on the type of HD, product specifications and requirements, and the mode of transport.
Comment Summary #11: Several commenters suggested that solid oral dosage forms should be allowed to be transported in pneumatic tubes.
Response: Comment partially incorporated. Pneumatic tubes must not be used for any antineoplastic HDs, because of the potential for breakage or powder contamination during transport, but are acceptable for other solid, oral HDs based on the assessment of risk.
Comment Summary #12: The commenter suggested that the General Chapter should include information on the carrier's policy for transport.

Response: Comment not incorporated. This is outside the scope of the General Chapter. A carrier's policy for transport may differ between companies.
Comment Summary #13: The commenter suggested adding that the labeling, packaging, and transport requirements should not apply to non-antineoplastic HDs.
Response: Comment not incorporated. The labeling, packaging, and transport requirements should be determined by the entity's assessment of risk, if performed.
Comment Summary #14: The commenter suggested inclusion of guidance on handling Resource Conservation and Recovery Act (RCRA) hazardous waste.
Response: Comment not incorporated. This is outside the scope of the General Chapter.

12. Dispensing Final Dosage Forms
Comment Summary #1: The commenter requested that a specific language regarding dispensing a solid oral dosage form into an individual medication cup be added.
Response: Comment not incorporated. Dispensing in an individual medication cup falls within HDs that do not require any further manipulation.
Comment Summary #2: The commenter indicated that use of automated packaging machines should be allowed for HDs.
Response: Comment partially incorporated. Automated packaging machines may create powdered HD contaminants and must not be used for counting of antineoplastic HDs. Automated packaging machines may be used for counting other HDs based on the entity's assessment of risk, if performed.
Comment Summary #3: The commenter suggested further containment requirements should not be subjected to final dosage forms that do not require any further manipulation.
Response: Comment partially incorporated. There are no further containment requirements for final dosage forms that are dispensed without any further manipulation unless required by the manufacturer or if visual indicators of HD exposure hazards are present.
Comment Summary #4: The commenter requested guidance on handling oral solid dosage forms at the community pharmacy.
Response: Comment partially incorporated. The section was revised and clarified for dispensing final dosage forms of HDs.
Comment Summary #5: The commenter recommended adding that gloves must be worn for dispensing final dosage forms.
Response: Comment not incorporated. The PPE requirement should be determined by the entity's SOP and should be based on the entity's occupational safety plan and assessment of risk, if performed (see also Section 7).
Comment Summary #6: The commenter suggested that the pill counting tray should be deactivated and decontaminated after every use.
Response: Comment incorporated.
Comment Summary #7: The commenters suggested that automatic counting and packaging machines may be used for all HDs.
Response: Comment partially incorporated. Automated counting and packaging must not be used for antineoplastic HDs.

Comment Summary #8: The commenter suggested that the exemption against use of automated counting machines should only apply to tablet and capsule forms of antineoplastic HDs.
Response: Comment incorporated.

13. Compounding
Comment Summary #1: The commenters suggested addressing crushing tablets and opening capsules for compounding.
Response: Comment incorporated.
Comment Summary #2: The commenter indicated that tablets may be split outside of a negative pressure environment.
Response: Comment partially incorporated. This may be guided by the entity's assessment of risk for tablets that are not antineoplastic.
Comment Summary #3: The commenters indicated that a plastic-backed preparation mat should not be required for compounding sterile and nonsterile preparations.
Response: Comment incorporated. Plastic-backed preparation mats are recommended and not required for compounding.
Comment Summary #4: The commenter suggested clarifying when the plastic-backed preparation mat should be changed.
Response: Comment not incorporated. Plastic-back preparation mats are recommended and they should be changed if a spill occurs and as determined by the entity based on work practices and types of HDs prepared.
Comment Summary #5: The commenters suggested that it is unnecessary to use dedicated equipment if appropriate deactivation/decontamination processes are in place.
Response: Comment not incorporated. The Expert Committee determined that disposable or dedicated equipment must be used to minimize the risk of cross-contamination.
Comment Summary #6: The commenters suggested that APIs should be preferred over crushing tablets.
Response: Comment not incorporated. This is outside the scope of the General Chapter. The section indicates that APIs or other powdered HDs must be handled in a C-PEC to protect against occupational exposure, especially during particle generating activities.
Comment Summary #7: The commenters suggested that weighing APIs should occur in a C-PEC.
Response: Comment partially incorporated. The Expert Committee determined that APIs or other powdered HDs must be handled in a C-PEC, especially during particle generating activities such as weighing powders.

14. Administering
Comment Summary #1: The commenters suggested addressing crushing tablets and opening capsules for administration.
Response: Comment incorporated.
Comment Summary #2: The commenter suggested that administration should not be included in the General Chapter, because it does not apply to pharmacy personnel.

Response: Comment not incorporated. The scope of the General Chapter applies to all healthcare personnel.
Comment Summary #3: The commenters recommended clarifications on protective techniques during administration as it relates to priming intravenous tubing.
Response: Comment incorporated.
Comment Summary #4: The commenter suggested that protective medical devices are not required for the administration of non-antineoplastic HDs.
Response: Comment not incorporated. The requirements for administration should be determined by the entity's assessment of risk, if performed.
Comment Summary #5: The commenter recommended adding a table defining the PPE requirements based on the type of administration performed.
Response: Comment not incorporated. The General Chapter refers to the NIOSH list of antineoplastic and other HDs which provides a list of PPE requirements for possible handling scenarios that may be encountered in healthcare settings.
Comment Summary #6: The commenters indicated that CSTDs should be recommended and not required for administration of HDs when the dosage form allows.
Response: Comment not incorporated. The Expert Committee determined that CSTDs are required for administration of antineoplastic HDs when the dosage form allow, because there are no other engineering controls available to protect healthcare personnel from exposure during administration.
Comment Summary #7: The commenter indicated that opening unit doses and transferring solid oral dosage forms does not pose a risk of exposure and should be exempted from the administration requirements in the General Chapter.
Response: Comment not incorporated. The requirements for administration should be determined by the entity's assessment of risk, if performed.
Comment Summary #8: The commenter recommended an exemption from the PPE requirements and an exemption from the use of a plastic pouch for non-antineoplastic HDs dosage forms requiring manipulation.
Response: Comment not incorporated. The requirements for administration should be determined by the entity's assessment of risk, if performed.
Comment Summary #9: The commenter suggested that the administration requirements should only apply to antineoplastic HDs.
Response: Comment not incorporated. The requirements for administration should be determined by the entity's assessment of risk, if performed.

15. Deactivating, Decontaminating, Cleaning, and Disinfecting
Comment Summary #1: The commenter suggested reorganizing and rewording the section for clarity.
Response: Comment incorporated.
Comment Summary #2: The commenter suggested that the C-PEC does not need to be required to be decontaminated between compounding of different HDs.
Response: Comment partially incorporated. The Expert Committee revised the decontamination requirement to the work surfaces of the C-PEC, instead of requiring decontamination of the entire C-PEC.
Comment Summary #3: The commenter suggested that only areas where HDs are manipulated should be routinely deactivated, decontaminated, and cleaned.

Response: Comment not incorporated. The Expert Committee determined that all areas where HDs are handled, such as during receipt, compounding, transport, administration, and disposal, should be properly deactivated, decontaminated, and cleaned.
Comment Summary #4: The commenters indicated that the frequency and the surfaces to be cleaned should be determined by the entity.
Response: Comment incorporated.
Comment Summary #5: The commenters suggested that areas where deactivation, decontamination, and cleaning should occur be clarified.
Response: Comment partially incorporated. The entity must establish written procedures for decontamination, deactivation, and cleaning. The locations, procedures, agents used, and documentation requirements should be determined by the entity.
Comment Summary #6: The commenter indicated that respiratory protection should be required when cleaning must be done in an area where ventilation is not possible.
Response: Comment incorporated.
Comment Summary #7: The commenters indicated that there is no single method or process that deactivates all available HDs.
Response: Comment incorporated.
Comment Summary #8: The commenters suggested that a sporicidal agent be added as an example of agents that may be used.
Response: Comment incorporated.
Comment Summary #9: The commenters suggested that sterile alcohol should not be required for cleaning areas used for nonsterile compounding.
Response: Comment incorporated.
Comment Summary #10: The commenters suggested that the section should be reorganized to follow the process of deactivation, decontamination, cleaning, and disinfection.
Response: Comment incorporated.
Comment Summary #11: The commenter suggested clarification on use of oxidizers and disinfectants.
Response: Comment incorporated.
Comment Summary #12: The commenter recommended guidance on disposal of materials used in deactivation, decontamination, cleaning, and disinfection.
Response: Comment incorporated.
Comment Summary #13: The commenters indicated the deactivation and decontamination should be distinguished.
Response: Comment incorporated.
Comment Summary #14: The commenter recommended that the reference to wipe sampling in this section should be removed, because it is discussed in the section for environmental quality and control.
Response: Comment partially incorporated. The Expert Committee determined that wipe sampling can be used to document the effectiveness of the agent used in decontamination. A cross-reference is provided to refer users to the section on environmental quality and control.
Comment Summary #15: The commenter suggested including examples of agents that may be used for deactivation, decontamination, cleaning or disinfection.

Response: Comment not incorporated. The agent used should be appropriate for the type of HD, location, and surface material. The agents to be used should be selected by the entity.
Comment Summary #16: The commenter suggested clarification that germicidal agents do not kill spores.
Response: Comment not incorporated. This is outside the scope of the General Chapter. General Chapter <797> addresses cleaning and disinfecting of the sterile compounding area.
Comment Summary #17: The commenters indicated that the C-PEC does not need to be decontaminated between compounding of different HDs.
Response: Comment partially incorporated. The Expert Committee determined that the work surfaces within the C-PEC must be decontaminated between compounding of different HDs.
Comment Summary #18: The commenter suggested that the cleaning and disinfection processes should be aligned with <797>.
Response: Comment incorporated.
Comment Summary #19: The commenter suggested that the C-PEC does not need to be decontaminated when a CSTD is used for compounding.
Response: Comment not incorporated. The Expert Committee determined that decontamination is necessary even after the use of a CSTD due to the potential of HD residue on the container that may be transferred to the C-PEC.
Comment Summary #20: The commenters suggested that agents used for deactivation, decontamination, and cleaning should not be delivered by a spray bottle.
Response: Comment incorporated.
Comment Summary #21: The commenters suggested the work tray under the C-PEC should be cleaned weekly.
Response: Comment partially incorporated. The Expert Committee determined that the work tray should be cleaned monthly; however, it will consider increasing the frequency in a future revision of the General Chapter.
Comment Summary #22: The commenter suggested adding a table stating the frequency for deactivation, decontamination, cleaning, and disinfection.
Response: Comment not incorporated. The Expert Committee will consider including the frequency in a future revision.
Comment Summary #23: The commenter suggested clarifying where the work tray is located in a C-PEC.
Response: Comment incorporated. Some C-PECs may not have a work tray. Entities should refer to the C-PEC manufacturer for information specific to the location of the work tray, if available.
Comment Summary #24: The commenter suggested clarifying when respirators are recommended during the decontamination step.
Response: Comment incorporated.
Comment Summary #25: The commenters suggested that deactivation, decontamination, cleaning, and disinfection are not required for entities handling non-antineoplastic HDs.
Response: Comment not incorporated. The requirements for deactivation, decontamination, cleaning, and disinfection should be based on the type of HD

contaminant, location, and surface materials and should be determined by the entity's assessment of risk, if performed.
Comment Summary #26: The commenter requested inclusion of examples of activities that warrant respiratory protection.
Response: Comment not incorporated. The General Chapter refers to the NIOSH list of antineoplastic and other HDs which provides a list of PPE requirements for possible handling scenarios that may be encountered in healthcare settings.

16. Spill Control
Comment Summary #1: The commenter suggested distinguishing between HD and hazardous waste.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #2: A commenter suggested a specific brand of product to protect against hazardous waste.
Response: Comment not incorporated. This is outside the scope of the General Chapter.
Comment Summary #3: The commenter suggested the use of a device to change the C-SEC pressure from positive to negative during an HD spill or C-PEC failure for compounding sterile preparations.
Response: Comment not incorporated. The Expert Committee determined that a negative pressure C-SEC is required for compounding sterile HD preparations.
Comment Summary #4: The commenter suggested that the spill control requirements should not apply to non-antineoplastic HDs.
Response: Comment not incorporated. The spill control requirements should be determined by the entity's assessment of risk, if performed.
Comment Summary #5: The commenters suggested that qualified personnel should only be required to be available while HDs are being handled and not at all times.
Response: Comment incorporated.
Comment Summary #7: The commenter requested information about documenting spills.
Response: Comment not incorporated. Documentation requirements should be guided by the entity's policies and procedures.
Comment Summary #8: The commenter suggested that non-employee incident reports should not be required.
Response: Comment incorporated.

17. Documentation and Standard Operating Procedures
Comment Summary #1: The commenter suggested including a standard operating procedure (SOP) for hand washing.
Response: Comment not incorporated. Hand washing is addressed in General Chapters <795> *Pharmaceutical Compounding—Non-sterile Preparations* and <797> *Pharmaceutical Compounding—Sterile Preparations*.
Comment Summary #2: The commenter suggested clarification between the documentation requirements and the SOPs that a facility should have as related to the activities performed.

Response: Comment not incorporated. The General Chapter provides a list of recommended SOPs; however, the entity must develop their own SOPs for handling HDs for all situations in which HDs are used throughout the facility.
Comment Summary #3: The commenter requested guidance on the length of time for record retention.
Response: Comment not incorporated. Record retention should be guided by the entity's policies and procedures and applicable federal, state, or local regulations.
Comment Summary #4: The commenter suggested that reference to OSHA should be removed because the General Chapter may be used in countries outside of the United States.
Response: Comment not incorporated. The Expert Committee determined that personnel must document training requirements according to OSHA standards and other applicable laws and regulations. OSHA standards may also be accessible in countries outside of the United States.
Comment Summary #5: The commenters noted that the OSHA reference should be properly cited.
Response: Comment incorporated.
Comment Summary #6: The commenter suggested that work place injury reporting and disposal should be added to the list of recommended SOPs.
Response: Comment incorporated.
Comment Summary #7: The commenter suggested including a template for the recommended SOPs.
Response: Comment not incorporated. SOPs should be specific for each entity.

18. Medical Surveillance
Comment Summary #1: Many commenters indicated that medical surveillance should not be required and suggested eliminating the section.
Response: Comment not incorporated. Medical surveillance is a recommendation and is not a mandatory requirement.
Comment Summary #2: The commenter suggested that the medical surveillance records are not required for employees handling only non-antineoplastic HDs.
Response: Comment not incorporated. Medical surveillance is a recommendation and records maintenance should be determined by the entity and should be based on the entity's assessment of risk, if performed.
Comment Summary #3: The commenters requested more specific information on elements of a medical surveillance program.
Response: Comment not incorporated. The Expert Committee suggested that the medical surveillance program is a recommendation and should be entity-specific if performed.
Comment Summary #4: The commenter suggested that medical surveillance should not apply to those who only handle non-antineoplastic HDs.
Response: Comment not incorporated. Medical surveillance is a recommendation and not a mandatory requirement. This should also be based on the entity's assessment of risk, if performed.

Comment Summary #5: The commenter suggested that medical surveillance should only be applied to personnel who manipulate HDs and should not broadly apply to all personnel who handle HDs.
Response: Comment not incorporated. The Expert Committee determined that personnel who handle HDs, including those who receive, administer, and transport HDs, have a risk of exposure. Medical surveillance is recommended for all personnel who handle HDs; however, it is not a mandatory requirement.
Comment Summary #6: The commenter suggested that workers should be able to opt out of medical surveillance.
Response: Comment not incorporated. Entities should determine when workers may opt-out of medical surveillance programs.
Comment Summary #7: The commenter suggested that a more actionable plan for the medical surveillance data is needed.
Response: Comment not incorporated. The General Chapter provides guidance on a follow-up plan for medical surveillance.

Glossary
Comment Summary #1: A commenter requested a definition of trace amounts.
Response: Comments not incorporated. Trace amounts are not discussed in the General Chapter and is outside the scope of the General Chapter.
Comment Summary #2: The commenter requested a definition for child bearing age.
Response: Comments not incorporated. Child bearing age is not discussed in the General Chapter and is outside the scope of the General Chapter.
Comment Summary #3: The commenter requested a definition for cross-contamination, because it is frequently misunderstood.
Response: Comments not incorporated. This is outside the scope of the General Chapter.
Comment Summary #4: Several commenters requested a definition of unclassified space.
Response: Comment incorporated.
Comment Summary #5: The commenter requested clarification of the definition of buffer room.
Response: Comment incorporated.
Comment Summary #6: The commenter suggested a definition for buffer area.
Response: Comment not incorporated. The buffer room must be a room that is negative pressure to the adjacent areas.
Comment Summary #7: The commenter suggested clarification of the negative pressure requirement for the buffer room.
Response: Comment not incorporated.
Comment Summary #8: The commenter suggested an alternative definition of a CACI to differentiate it from an isolator used in industry.
Response: Comment not incorporated. This is outside the scope of the General Chapter; however, it will be considered in the revision of General Chapter <797>.
Comment Summary #9: The commenter suggested deletion of the definition for “compounding supervisor” and suggested that the responsibilities of each activity should be assigned to a designated person.

Response: Comment not incorporated.
Comment Summary #10: The commenter suggested that the definition for C-SCA should include the ISO classification, negative pressure, ACPH requirements as well as the activities that may be conducted in the room.
Response: Comment not incorporated. The C-SCA requirements are specified in Section 5.
Comment Summary #11: The commenter requested specifications for air flow requirements and placement of HEPA filters for containment ventilated enclosures (CVEs).
Response: Comment not incorporated. There is currently no established standard for CVEs; however, the Expert Committee will consider future revisions to the CVE requirements when more information becomes available.
Comment Summary #12: The commenters requested clarification to the definition of externally vented, specifically whether it must be vented to the outside of the building.
Response: Comment incorporated.
Comment Summary #13: The commenter suggested a definition for handling HDs to include the receipt, storage, transport, and disposal of final dosage forms of manufactured products.
Response: Comment not incorporated. The handling requirements are described in the General Chapter and apply to compounded preparations as well as manufactured products. The Expert Committee determined that it was not practical to list all the activities that related to handling HDs.
Comment Summary #14: The commenter suggested adding a definition of hazardous waste.
Response: Comment not incorporated. The Expert Committee determined that a definition for hazardous waste was not needed in the General Chapter.
Comment Summary #15: The commenter suggested adding a definition of manipulation of HDs.
Response: Comment not incorporated. The Expert Committee determined that it was not practical to list all the activities that related to manipulation of HDs.
Comment Summary #16: The commenter suggested that negative pressure should be described as a lower pressure relative to adjacent areas.
Response: Comment incorporated.
Comment Summary #17: The commenter suggested adding the pressure requirements for negative pressure in inches of water column to the definition.
Response: Comment incorporated. The glossary provides a general definition of the term and the specific requirements are provided in the text of the General Chapter, specifically Section 5.
Comment Summary #18: The commenter suggested that transfer in and out of a pass-through can be done through a rapid transfer ports (RTPs) in an isolator.
Response: Comment not incorporated. This is outside the scope of the General Chapter. The Expert Committee will consider addition of language related to RTPs in a revision to General Chapter <797>.
Comment Summary #19: The commenter suggested that the positive pressure should be described as a higher pressure relative to adjacent areas.
Response: Comment incorporated.

Comment Summary #20: The commenter suggested addition of definitions for storage and unpacking.
Response: Comment not incorporated. Unpacking and storage is described in Section 5.1 and 5.2 of the General Chapter.

Appendix 1: Acronyms
Comment Summary #1: The commenter suggested inclusion of the Hazard Communication Standard.
Response: Comment incorporated.

Appendix 2: Examples of Designs for Hazardous Drugs Compounding Areas
Comment Summary #1: The commenter suggested the BUD be specified as 12 hours instead of referencing General Chapter <797>.
Response: Comment not incorporated. General Chapter <797> is currently under revision. The Expert Committee determined that a cross-reference to the BUDs in <797> will prevent any discrepancies between the two General Chapters.
Comment Summary #2: The commenter suggested adding doorways to the example designs.
Response: Comment not incorporated. The example diagrams are intended to provide general concepts of the engineering controls.
Comment Summary #3: The commenter suggested adding a designated area in the example design for donning and doffing.
Response: Comment not incorporated. The example diagrams are intended to provide general concepts of the engineering controls.

References
Comment Summary #1: The commenter suggested citing sources throughout the General Chapter.
Response: Comment not incorporated. The Expert Committee determined that there was overlap between the references where some references apply to several sections and several references may apply to only one section.
Comment Summary #2: The commenter noted a correction to the citation to the National Sanitation Foundation (NSF) standard.
Response: Comment incorporated.