

# SPEAKING of...

## Cleaning the Cleanroom following Hazardous Drug Compounding



### A Conversation with Patricia C. Kienle, RPh, MPA, FASHP

**Pharmacy Purchasing & Products:** When hazardous drugs are compounded in the pharmacy, what assumptions should be made about contamination within the engineering controls and the cleanroom/compounding area?

**Patricia C. Kienle:** Whenever we compound any sterile preparations we have to take precautions to ensure safe and effective products. However, when hazardous drugs are introduced, we have the additional responsibility of ensuring that our staff is also protected. We have to assume that anything that comes in contact with a hazardous product may be contaminated and should be managed accordingly. Contamination may be introduced from residue on the manufacturer's packaging, so even personnel who receive and transport products within your facility must be trained to take appropriate precautions. Contamination can also occur during the compounding process, either through normal operations or by a break in technique.

**PP&P:** What are the best resources for developing cleaning protocols for hazardous compounding?

**PK:** There are three main sources for cleaning protocols. Start by reviewing the USP <797> section on Cleaning and Disinfectants, which is an excellent resource; Appendix II in this document details the disinfectants that are available. The NIOSH Alert on Preventing Occupational Exposure to Antineoplastic and Other Hazardous Drugs in Healthcare Settings further outlines routine cleaning and decontamination practices. Finally, ASHP's Guidelines on Handling Hazardous Drugs, a robust source for practical details, is a must-read.

In addition, meet with your facility's infection control practitioner, as this person will be the most knowledgeable concerning appropriate cleaning products and dilutions. Also, work with your facilities department to be sure you are complying with state and federal regulations and policies for appropriate disposal methods.

**PP&P:** What cleaning protocols do you recommend following hazardous drug compounding?

**PK:** With non-hazardous preparations, the general cleaning process with sterile water will remove any solids, and then all surfaces are sanitized and disinfected using sterile alcohol. Because hazardous drug compounding leaves behind a residue, cleaning with an appropriate detergent or bleach must be done regularly: either daily or weekly depending on the agents you are

using and the volume of compounding that is taking place, and, of course, anytime there is a known contamination.

**PP&P:** What cleaning products should be used?

**PK:** While sterile water and sterile alcohol are the clear choices for initial cleaning and disinfecting, choosing the appropriate detergent to remove contamination can be more challenging. The MSDS sheets for each product are a good starting point, as they provide guidance on appropriate cleaning agents.

The most important step in determining appropriate cleaning agents is to choose cleaning products that are effective against the microbes that are in your hospital. The infection control department will be an invaluable resource in determining this. Pharmacy should meet regularly with infection control to review whether the current products and concentrations are adequate. Environmental monitoring results, including surface sampling, will help determine the effectiveness of your cleaning products.

While I am a proponent of using disposable, lint-free, one-time use items generally in the cleanroom, these products are particularly valuable when the cleaning follows hazardous drug compounding.

**PP&P:** Who should be cleaning the hazardous drug compounding area?

**PK:** While you may use housekeeping staff—particularly those trained to clean the OR and Central Supply—to clean the walls and floors of the cleanroom, all engineering controls should be cleaned and decontaminated by the same pharmacy staff that is doing the compounding. As the compounding pharmacy staff knows what products were used during the compounding process, their expertise as to which agents must be used for appropriate decontamination is invaluable.

**PP&P:** How can you monitor cleaning processes?

**PK:** The surface sampling test required by USP <797> tests the ability of personnel

### Online Resources for Hazardous Compounding Cleaning Protocols

**NIOSH Alert:** [www.cdc.gov/niosh/docs/2004-165/](http://www.cdc.gov/niosh/docs/2004-165/)

**ASHP's Guidelines on Handling Hazardous Drugs:**

[www.ashp.org/doclibrary/bestpractices/ashpguidelineshandlinghazardousdrugs.aspx](http://www.ashp.org/doclibrary/bestpractices/ashpguidelineshandlinghazardousdrugs.aspx)

to adequately clean and disinfect the compounding areas, and also ensures that the cleaning solutions being used are appropriate for the facility.

USP <797> recommends monitoring areas for uncontained hazardous residue. If hazardous drug contamination is detected when doing surface wipe testing of the BSC or CACI, countertops, or floors, a thorough cleaning and review of techniques and devices used is in order.

**PP&P:** What PPE should be required during cleaning?

**PK:** The garbing process is just as important for cleaning the cleanroom as it is for the compounding process. Your cleaning staff should always follow the same guidelines as the compounding staff and garb in an identical manner. It is important that your cleaning staff is aware of the need to regarb whenever they leave the room.

Also, be sure that the nitrile gloves you purchase are chemotherapy-rated, often it is incorrectly assumed that all nitrile gloves are automatically chemotherapy-rated.

**PP&P:** How should cleaning products be disposed of?

**PK:** This is an important issue and will be guided by the EPA and your state's requirements. It is essential to establish clear policies and procedures that outline your processes for cleaning and disinfecting—both routine and for spills—as well as for disposal of all compounding supplies. Disposal processes for sharps, infectious waste, and RCRA waste must be specifically addressed.

Depending on the hazardous products used and the volume of waste generated, special disposal procedures may be required. Use your internal resources to develop these disposal policies and procedures: your facilities department can provide guidance to ensure you are in compliance with state and federal regulations. ■

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