

7 Deadly Myths of USP 797 Webinar Q&A – By Eric Kastango

Q: Should gowns that tie in back be used in a clean room?

A: The chapter states: a non-shedding gown with sleeves that fit snugly around the wrists and enclosed at the neck is donned. Gowns designated for buffer area use shall be worn, and preferably they should be disposable.” Typically, these gowns are used when preparing hazardous drugs. As long as they meet the requirements stated above, there is no prohibition to wearing these types of gowns.

Q: How does a Class 5 room change work flow practices?

A: There is no requirement for an ISO Class 5 buffer room. I strongly recommend that you not build an ISO Class 5 buffer area.

Q: When outsourcing, we see extended stability dating. If the outsourcers are able to supply this information to us, could we use this extended stability for our own manufacturing. Then, can we use this extended data if our sterility data supports the dating supported by the outsourcer’s data?

A: The chapter states: “BUDs for compounded preparations are usually assigned on the basis of professional experience, which should include careful interpretation of appropriate information sources for the same or similar formulations. When assigning a beyond-use date, compounding personnel should consult and apply drug-specific and general stability documentation and literature where available, and they should consider the nature of the drug and its degradation mechanism, the container in which it is packaged, the expected storage conditions, and the intended duration of therapy (see Expiration Date and Beyond-Use Date under Labeling in the General Notices and Requirements). Stability information must be carefully interpreted in relation to the actual compounded formulation and conditions for storage and use. Predictions based on other evidence, such as publications, charts, and tables, would result in theoretical BUDs.” Using someone else’s stability information must be based on the fact that you are preparing the CSPs in the same manner and using drugs from the same manufacturer under the same conditions. I would strongly advise against using anyone else’s data unless you have a copy of their study or data.

Sterility of CSP is independent of chemical stability when determining the BUD of a CSP. Each batch of drug would need to be sterility tested in order to extend the BUD. If the drug is stable for 6 days and it is sterile, then it can only be given a BUD of 6 days. If the chemical stability is longer than the 14 day incubation period as required by USP <71>-Sterility Tests, then the BUD can be based on the chemical stability of the drug. This assumes that your package-product container closure (bag, vial, stopper) can maintain the sterility of the CSP solution during the storage period.

Q: What sterility tests are required to extend dating on high risk products such as cardioplegia? Since we cannot produce these products "just in time", how should we proceed to establish adequate beyond use dating and stability documentation

A: Any sterility testing must be performed in accordance with USP Chapter <71> or some other validated method. Your question is too complex to answer via this forum. Consider contacting me via email.

Q: Compounding staffs jewelry that cannot be removed from their wrist - e.g. jade bracelet. How do you resolve the issue?

A: How do you ensure that the area under the bracelet can be properly cleaned? How do you protect the patient from risk of infection from this person? If no jewelry is permitted in the buffer area, this person should not compound.

Q: What are the gowning and gloving requirements for barrier isolators not in a clean room?

A: The answer can be found in the chapter.

Q: What are testing, air, surface, etc required for barrier isolators not in a clean room?

A: The answer can be found in the chapter.

Q: Every time I see training videos, they demonstrate aseptic technique with horizontal LAFW. Our hospital only uses vertical LAFW. Where can I get training videos demonstrating aseptic technique using a vertical LAFW?

A: There are a number of hazardous drug compounding training programs available from Critical Point, LLC (www.criticalpoint.info) and ASHP (www.ashp.org) that address vertical laminar airflow. Visit these websites to find the training programs.

Q: What differences exist with garbing, anteroom & buffer area cleanliness, etc between traditional laminar flow hood use and use of a barrier isolator?

A: The answer can be found in the chapter.

Q: Can an autoclave and convection oven be allowed in a clean room?

A: Since water is not permitted in a buffer area and an autoclave needs water and a drain to work, it should not be located in an ISO Class 7 buffer area. A convection oven generates a tremendous amount of heat and may make the clean room warm. I would recommend that the oven be placed in the ante area along with the autoclave.

Q: What type of cleaning solutions do you recommend to clean the ante & compounding rooms? And do you recommend alternating every week?

A: There is a table of cleaning agents that can be used in one of the appendices of the chapter. Unless you have a concern with spores, there is no requirement in the chapter to rotate chemical agents.

Q: When putting together advantage bags. Since it is a separate vendor product, it is unclear where these should be put together. It appears the product has a critical site where you have an exposed area that can be introduced into the solution. Where within 797 should we put Advantage vials together?

A: You consult the manufacturer's package insert or contact the manufacturer for details. I believe that these proprietary bag-vial systems should be assembled in an ISO Class 5 primary engineering using proper aseptic technique.

Q: In facility design, I am getting resistance from my engineering department about caulking the ceiling tiles. They want to place heavy tiles with "seal gaskets." Is this acceptable?

A: The chapter states: "Ceiling tiles shall be caulked around each perimeter to seal them to the support frame." When cleaning the ceiling tiles, they cannot "pop out" of the ceiling grid.

Q: We have a window. As long as the window is sealed is there an issue in meeting 797 with an outside window in the buffer area?

A: There is no issue as long as the ledge can be cleaned and the window does not produce any condensation, which can be a potential source of microorganisms.

Q: Can a complete face shield be used to cover the eye glasses?

A: Eye glasses should not be considered like cosmetics. They are required for the employee to be able to see and do not have to be covered while working in an ISO Class 5 primary engineering control. Eye protection should be considered when handling cleaning agents and when mopping the ceiling.

Q: What are the challenges we should be concerned with in choosing an ISO 5 clean room without use of IV hoods? - Similar to the clean room you showed in the previous slides.

A: The room in the slide was an ISO Class 7 room with an ISO Class 5 zone dedicated for compounding. Financially, building a room that meets ISO Class 5 air cleanliness requirements, air changes and pressure-differential would be very costly. There is no requirement for such a room when compounding sterile preparations.

Q: Eric, how come you did not have a "control group" when you did your study with syringe opening? i.e. you did not test if hands/arms were shedding particle by themselves.

A: It is a known fact that hands and arms shed particles and we did control testing during the study to demonstrate this fact. This data was not presented in my slides.

Q: I work in a hospital that is going to be relocating in 3-4 years. We do not currently have a clean room and have been told it would cost \$200-\$300 K to construct one. Is there a more cost effective interim solution you can offer to gain as much compliance as possible?

A: An isolator would be an effective interim solution, or working in your existing facility while complying with other requirements of the chapter and possibly short dating the BUDs of the CSPs.

Q: Does using a CAI (glove box) in a non ISO class 7 room allow for the same beyond use dating as a clean room?

A: Only if the isolator meets the requirements stated in USP Chapter <797>.

Q: We have a mounted split-type air conditioner in our clean room that doesn't have a hepa filter. Would this interfere with the air quality? Inside the unit there is some moisture accumulation that our facilities put bromide tablets to reduce the growth fungi or contaminates? I am not convinced this correct.

A: Unfiltered air can have a negative effect on air quality in a cleanroom. I have no experience with this procedure.

Q: Unable to find sterile chemo gloves, what would be best practice in this situation?

A: I understand Covidien is advertises that they have sterile chemo gloves. In lieu of sterile chemo gloves, double glove with sterile gloves that are made of neoprene or nitrile.

Q: Do the 2x2 alcohol swabs contain 'sterile alcohol'? They're labeled as sterile alcohol swabs.

A: Not all alcohol swabs are sterile. If they are labeled sterile, then you can use them.

Q: What is the best approach to modify limited space satellites to comply with 797? For example, prepare only low risk or use a MIC.

A: Your plan sounds reasonable.

Q: With an isolator and the use of PhaSeal, do we need additional engineering controls? 797 states no if chemo volume is low, therefore, what is considered low volume?

A: Two tiers of containment are only required when preparing low-volume chemo. In the proposed language, the USP Sterile Compounding Committee proposed that 5 chemos/day qualified as low-volume. Since the number is arbitrary, it was removed. I consider low-volume chemo one CSP per day.

Q: How do 797 standards apply to barrier isolators, which may be a less costly alternative to full clean rooms?

A: The answer can be found in the chapter.

Q: What are the requirements for gowning for barrier isolators? Also, the glove touch test is required pre compounding and periodically. If we have been compounding for awhile, do we need to do a glove test?

A: The garbing requirements when using an isolator can be found in the chapter. Glove fingertip sampling is required when using an isolator. Everyone needs to demonstrate their aseptic proficiency as required by the chapter regardless of how long they have been compounding.

Q: Can you clarify the line of demarcation requirements from buffer area to ante area. <USP 797> states there are some air flow/exchange requirements. I thought the line was enough with a confirmed air testing of ISO 7 (buffer) & ISO 8 (ante) was adequate.

A: Personal hand hygiene and garbing procedures, as well as cleaning support operations, will be performed in the ante area. A line of demarcation (LOD) will separate the clean side of the ante area

from the dirty side. Since a sink is integral to proper hand hygiene practices, the sink needs to be located on the "clean side" of the ante area. If you have an "open air" cleanroom with the buffer area separated from the ante area, you need to have an airflow displacement velocity of 40 feet per minute.

Q: What about Monoject's plastic containers for needles and syringes? Wouldn't these be better than any of the paper packages?

A: These packages were tested and shown to generate particles. Refer to the study for additional information.

Q: How many hazardous drugs can be prepared in a positive pressure room (within a barrier isolation chamber and with Phaseal)? We are told 10 preps per week - where does this number come from?

A: Who provide you with the number of ten preps per week? There is no numerical value assigned to this exemption published in the chapter. See early question/answer. It is up to the pharmacist to determine and justify the volume hazardous drugs to meet this exemption.

Q: We are a small facility and have days when we don't have any IV admixtures. Should we still go in and clean or does that add more particles?

A: If no compounding is being done on "quiet days" and the facility air handling is running and the primary engineering controls (e.g., hoods) are running and it was cleaned before you left it, there is no requirement to clean on these days.

Q: In order to meet the ISO 7 requirement for hazardous drug preparation, are both an ante room and buffer room required?

A: Yes and both areas must meet the ISO Class 7 air cleanliness requirements, air changes per hour and pressure differential. All of these requirements can be found in the chapter.

Q: If hood being used for sterile compounding has a window, does this constitute the "eye protection" component for PPE?

A: I don't understand the question. If you are working in a BSC, full personnel garb is required. If you are working in an isolator, the garbing requirement is dictated by data supplied by the isolator manufacturer.

Q: If the floors need waxing, how can I get it waxed without breaching sterility?

A: The floors don't need to be waxed unless the manufacturer states this as a requirement. Waxing does not necessarily breach sterility. The room will have an allowable number of particles and as long as the wax does not generate particles and is safe in compounding areas, then it can be used.

Q: Do eye glasses fall into the jewelry removal category?

A: No

Q: Can you use non-sterile alcohol as long as the bottle is only used for 24hrs?

A: No, sterile alcohol is required within the ISO Class 5 environment and on gloved hands.

Q: So, there is still lack of head to head data on product contamination with pre and post 797 compounding regulations? If you want to silence the critics, this has to be done.

A: Who will do such as a study? Many of the advances in science, medicine and pharmacy were done on observed practices and situations that led to patient incidents. An analysis of these events has led to the creation of many best practices that are in the chapter. There is no requirement that the USP SCC has to do any testing.

Not sure what additional proof is needed to convince or silence the critics. The number of sentinel events involving compounding errors and contamination and the number of dead patients should be proof that business as usual is no longer acceptable. Even in the face of evidence, if something is difficult, more expensive or inconvenient, people have ignored the evidence.

Q: Do you have evidence to support why sterile alcohol has to be used period?

A: Sterile alcohol is sterile and devoid of any contamination. Non-sterile alcohol can harbor spores like Bacillus, which has been implicated in a number of contamination events. Sterile alcohol needs to be used on critical sites, within the ISO Class 5 environment and on sterile gloves. Start clean, work to stay clean. Starting with potentially contaminated alcohol, which is a critical element in ensuring aseptic technique and a sterile CSP, is difficult to overcome.

Q: It does sound like you guys are making this stuff up as you go?

A: OK, if you think so. I would welcome the opportunity to speak with you directly to discuss your concerns in greater detail.

Q: Will physician office based pharmacies be responsible for compliance too?

A: Yes, the chapter is applicable to all practices regardless of setting.

Q: Do you have a "no makeup" policy and how well received by the staff if this policy?

A: When I managed sterile compounding operations, we had a no makeup policy. Meeting it was a condition of continued employment as a compounder.

Q: What do we use instead of gauze pads to clean hood?

A: You can use a non-shedding wipe. There are a number of manufacturers who manufacture them.

Q: What is your opinion on requiring nursing staff to complete a media fill challenge test?

A: I think that it is a great idea and if they routinely compound, they need to be properly trained.

Q: How does the use of a glove box fit in USP 797? Does the glove box have to be in a cleanroom?

A: The answer can be found in the chapter.

Q: When using a barrier isolator as opposed to a clean room, what gowning / garbing procedures are required?

A: The answer can be found in the chapter.

Q: With current push to develop depositories to take back and reuse other patients meds, bad belief unit-dose meds create safe haven for use? Can you comment?

A: I don't completely understand the question but the return and reuse of medicine dispensed to patients is generally prohibited by state pharmacy laws and/or organization policy. Unless the quality and integrity of medicine can be guaranteed, then the medication should not be reused.

Q: Is there a concise source for beyond use dating?

A: You can find a very detailed discussion on BUD in USP Chapter <797>.

Q: Are there changes to the use or requirement of sterile alcohol?

A: USP will be publishing over 100 FAQs that will be posted on the USP website that will clarify the use of sterile alcohol.

Q: Are there different standards for barrier isolator hoods?

A: What type of standards are you referring to? The chapter has a detailed discussion on isolators.

Q: Does Volumetric Air Sampling have to be done by an "outside source" - some companies specialize in this but expensive. Or can a hospital do this testing themselves, both the sampling and results read in house? Plus recommendations to set up baseline microbe numbers and types?

A: There is no prohibition from a hospital from doing their own air sampling as long as the requirements in the chapter are met. There have been several articles on setting up a baseline EM program.

Q: Why should a pharmacy that makes small amounts of CSPs for a hospital be an FDA approved company?

A: Because state law may prohibit non-patient CSP compounding and dispensing. Consult your state board of pharmacy for more information.

Q: Please clarify how USP 797 applies to the glove box environment.

A: -The answer can be found in the chapter

Q: Do you have any suggestions as far as operational workflow is concerned in regards to simplifying the pharmacist gowning procedure so that they are not spending the entire gowning and de-gowning for every unexpected emergent IV ordered?

A: The answer depends on a number of different factors. I cannot easily answer your question without additional information.

Q: Please explain "spraying" of gloves.

A: You take a spray bottle of sterile alcohol and spray or mist your hands.

Q: Are hospital laundered scrubs and gowns adequate for garbing?

A: Yes

Q: If a facility has a negative pressure isolator and a positive pressure isolator in separate areas, does there have to be a door separating the areas?

A: The area where the negative pressure isolator is located must be under negative-pressure and have at least 12 air changes per hour. Without a door to this area, it will be difficult to meet those requirements.

Q: It appeared that opening syringes causes air quality in LAFH's to be in excess of ISO 5 limits.

A: Yes it did but where you opened these packages relative to the direct compounding area (DCA) was critical. Because of the particles generated while opening syringes or compounding, unidirectional airflow is required within the ISO Class 5 environment.

Q: If a pharmacist prepares CSPs in an environment that does not meet 797, would he/she be guilty of adulteration?

A: I am not lawyer but I would imagine that if the CSP was made incorrectly (misbranded) or contaminated (adulterated), then a problem would exist.

Q: Final preparation labels seem to cause a concern....where to print, how to introduce and safely use in the cleanroom suite....advice?

A: There are a number of paper items in a cleanroom. Labels can be printed in the cleanroom as long as you can effectively control the number of particles generated during printing. Please refer to the Suggested SOP section on the chapter for additional information.

Q: Where should the pressure gauge be located, between the Chemo and Barrier room?

A: The answer can be found in the chapter.

Q: Where can I find the guidelines regarding outsourcing compounded products?

A: ASHP as published a paper on outsourcing. There have been a couple of articles published by Pharmacy Purchasing and Products magazine (www.pppmag.com) on the subject.

Q: Does it matter where dedicated cleaning equipment is stored?

A: As long as you meet the requirements in the chapter, no.

Q: Can you explain when to set-up your ante-area at ISO 7 vs. ISO 8?

A: An ISO Class 7 ante area is required for ante area that supports a negative-pressure hazardous drug compounding buffer area. Additional information can be found in the chapter.

Q: In my facility nurses are not dating multi dose vials after punctures, how can be improve compliance

A: Education, training, inspection, feedback and consequences.

Q: Will you provide the information you posted for outbreaks associated with using multi dose vials?

A: The slides are available for downloading. The reference of the article can be found on the slide.

Q: Barrier Isolators may give a false sense of USP 797 compliance. Are there main areas of non-compliance with pharmacies using barrier isolators, because they feel the barrier isolator confers sufficient compliance?

A: Cleaning, garbing and environmental sampling/testing are areas of possible non-compliance.

Q: I have an issue, we outsource a lot of our IVs, and use only the 'glove box/barrier isolators'. I am constantly arguing with staff who does not wear masks etc because "only their hands go into the box". 797 really seems to deal with clean rooms when it comes to the gowning/garbing/cleaning not glove boxes, do you know where there be more guidance coming in the new FAQ from 797? Any idea how to steer personnel (other than disciplinary!?)

A: Education is required to affect behavioral changes. If the education and training is not effective, disciplinary action may be required. If it is a department or pharmacy policy, the person would be insubordinate.

Q: Does the 28 day expiration date only apply to compounding pdts? What about creams and ointments?

A: The 28 days applies to multi-dose vials. Consult USP Chapter <795> Nonsterile Preparations for additional information.

Q: A glove box isolator (negative pressure, vented, hepa filtered – ISO5) must be in an ISO7 room by itself, unless low volume compounding is occurring. My question is, same scenario PLUS a closed system (PhaSeal) is being used along with ISO-5 negative pressure, vented heap filtered Germfree isolator, is an ISO7 environment still required outside of the isolator?

A: An isolator only has to be in an ISO Class 7 area if it does not meet the requirements found in the chapter. Consult the chapter for more information.

Q: Recently there has been email discussion regarding surface sampling on the ASHP Practice Managers List. Many folks seem to see surface sampling as a test of the facility that can be outsourced. My understanding is that surface sampling is a competency test for each employee's cleaning and sanitizing practices. Please clarify.

A: The microbiology portion of the testing can be done by a third-party but I agree with your assessment that is part of an employee's competency evaluation and needs to be managed accordingly.

Q: I don't understand how the gloved finger tip test works.

A: Visit Pharmacy Purchasing and Products Magazine website (www.pppmag.com) and search for articles on fingertip sampling.

Q: What is bubble testing?

A: It is a quantitative method of testing the integrity of a 0.22 micron filter after use. Visit Millipore website (www.millipore.com) and search for information on filter integrity testing.

Q: Can an emergency shower be placed in the ante room with a floor drain? Are there any guidelines that require an emergency shower near hazardous drugs?

A: Yes, if required and no, not in the chapter or the NIOSH Alert.

Q: USP 797 requires removal of jewelry prior to garbing and mixing sterile products. Can a wedding ring be left on or should that also be removed?

A: Ideally, all jewelry needs to be removed to ensure that all surfaces of the hand can be properly washed.

Q: I would love to get more detail on the use of gloveboxes. Would you be willing to do a program on gloveboxes exclusively?

A: Yes, we will do an program exclusively on isolators.

Q: How do you see 797 being implemented at radiopharmacies? Radioactives present many more challenges to clean room handling

A: The chapter has specific language regarding the handling and preparation of radiopharmaceuticals. Compliance with USP 797 is possible for nuclear pharmacies and nuclear medicine departments.

Q: Our hospital does only a few inpatient chemos each day. If these hazardous drugs are stored in a separate location, can the drugs be compounded in the same buffer area as other meds, provided they are compounded in a dedicated hood?

A: The answer can be found in earlier questions asked and answered, the USP chapter and the NIOSH Alert.

Q: What have some hospitals done to meet particle compliance with keeping refrigerators inside the buffer room?

A: The key to control the number of particles from a refrigerator would be to locate a low-wall return behind the refrigerator. This will pull away any generated particles.