Item#	Requirements	Yes	No	N/A	Additional Information
	Low Risk Level CSPs with 12 Hour or Less 'Beyond Use Date' (BUD)				
	ISO Class 5 Environment				
1	ISO Class 5 environments that are used for compounding outside of ISO Class 7 buffer areas are located in a segregated compounding area as defined by USP Chapter <797>.				
2	Only non-hazardous Compounded Sterile Products (CSPs) are prepared in ISO Class 5 environments located outside ISO Class 7 buffer areas.				
3	Personnel who compound in ISO Class 5 environments located outside of ISO Class 7 buffer areas perform hand hygiene and garbing in compliance with USP Chapter <797>.				
4	ISO Class 5 compounding environments located outside of ISO Class 7 buffer areas are cleaned according to the requirements of USP Chapter <797>.				
5	Administration of CSPs prepared in an ISO Class 5 environment that is located outside of an ISO Class 7 buffer area is initiated within 12 hours.				
	Single[1] and Multiple Dose[2] Vials				
6	Single dose vials that have been punctured outside of ISO Class 5 air are discarded if not used within 1 hour.				
7	Single dose vials that have been punctured inside ISO Class 5 air or better are discarded after 6 hours.				
8	Multiple dose vials are discarded within 28 days after initial puncture, or as directed by the manufacturer, whichever period is shorter.				
9	A CSP in a multi-dose vial shall meet the requirements of USP Chapter <51>.				
	Compounding Facility Management				
	Primary/Secondary Engineering Controls				
10	Primary and Secondary Engineering Controls are certified according to the guidelines of the Controlled Environment Testing Association (CETA) guidelines (CAG-003-2006) or similar guidelines as required by USP at least once every 6 months and whenever the device or room is relocated or altered or service subsequent to servicing of the compounding facility or equipment. Stop compounding until work/ service is completed and certification and validation of primary and secondary engineering controls is obtained.				
11	Primary Engineering Controls (PEC), including Isolators, CAI and CACI shall be located in restricted area ISO Class 7.				
12	When isolators are used for sterile compounding, the recovery time to achieve ISO Class 5 air quality shall be documented and internal procedures developed to ensure that adequate recovery time is allowed after material transfer before and during compounding operations.				
13	The buffer area is supplied with HEPA filtered air and has been certified to meet at least ISO Class 7 air standards for all compounding other than radiopharmaceutical preparation.				
14	The ante-area is supplied with HEPA filtered air and has been certified to meet at least ISO Class 8 air standards. If the ante-area is adjacent to a negative pressure ISO Class 7 buffer area, then it is supplied with HEPA filtered air and has been certified to meet at least ISO Class 7 air standards.				
15	A buffer area for compounding non-hazardous drugs is certified to have at least 30 air changes per hour (ACPH) and at least 15 of the 30 ACPH come from the HEPA filtered air supplied to the room. HEPA filtered supply air shall be introduced at the ceiling.				
16	Air returns should be mounted low on the wall creating a general top-down dilution of room air with HEPA-filtered make-up air. **Best Practice**[3]				

[1] A single-dose container is a single-use container intended for parenteral administration. It is intended for single use and is labeled as a single-dose container. USP Chapter <797>.
[2] A multi-dose container is a multiple use container that usually contains antimicrobial preservative intended for parenteral administration and usually contains antimicrobial preservative.
[3] USP Chapter <797> Appendix I. Principal Competencies, Conditions, Practices, and Quality Assurances.

Item#	Requirements	Yes	No	N/A	Additional Information
	Primary/Secondary Engineering Controls, con't.				
17	All HEPA filters shall be efficiency tested using the most penetrating particle size and shall be leak tested at the factory and then leak tested gain in situ after installation. **Documentation Required.**				
18	*Low, medium, and high risk*: The buffer area is physically separated from the ante-area by means of walls, doors, and pass-throughs.				
19	Smoke studies are conducted during dynamic operating conditions to verify unidirectional airflow and sweeping action over and away from the critical compounding area for each primary engineering control and all classified areas. **Documentation Required. Best Practice.**				
20	Smoke studies shall be conducted at least once every two years and (a) upon initial certification, and (b) immediately following any major service, movement of engineering control, or change of equipment located within the hood; (c) video documentation required. **Best Practice. Documentation Required.**				
	General Facility Design				
21	Access to the buffer area, ante area, and segregated compounding areas is limited to those who are performing compounding related activities.				
22	The buffer area and ante-areas are well lit, as required by USP Chapter <1066>.				
23	Buffer and ante areas maintain a temperature of 68°F ±2 (20ºC +/- 1) and a relative humidity between 30-65% and are conducive to operator comfort.				
24	The buffer area does not contain a sink, drain, or other source of water.				
25	A line of demarcation in the ante-area or segregated compounding area separates the less clean area from the clean area. **Best Practice**[4]				
26	The ante-area contains lint free non-shedding disposable paper towels and a sink that is equipped with hands-free controls for water and soap dispensing, and proper depth and capacity for hand washing up to the elbows.				
27	The furniture, equipment, and supplies in the ante area are limited to those which are essential for compounding related activities.				
28	The furniture, equipment, and supplies in the buffer area are limited to those which are essential for compounding related activities.				
29	All furniture, equipment, and surfaces in the ante area are nonporous, smooth, free from cracks and crevices, non-shedding, impermeable, cleanable, and resistant to degradation by cleaning agents.				
30	All furniture, equipment, and surfaces in the buffer area are nonporous, smooth, free from cracks and crevices, non-shedding, impermeable, cleanable, and resistant to degradation by cleaning agents.				
31	Ceiling panels in buffer area and ante area are impervious and hydrophobic.				
32	Ceilings panels, fixtures, and other penetrations through the ceiling are smooth, mounted flush and caulked around the perimeter of each to seal them to the frame.				
33	Walls are made of solid surface, locking sealed panels or epoxy-coated gypsum board provided they are impervious, cleanable and non-shedding. Documentation Required				
34	Floors are cleanable (wide sheet vinyl that is heat sealed at seams or other solid surface) and molding is coved.				

Item#	Requirements	Yes	No	N/A	Additional Information
	Cleaning and Disinfecting				

[4] USP <797> p.27.

35	Pharmacy maintains written policy and procedures for cleaning detailing cleaning agents, non-shedding wipes, mop materials, procedures for cleaning, frequency of cleaning, and documentation forms. **Documentation Required.**				
36	Mops, wipes, and other cleaning equipment are non-shedding and if re-usable, they are dedicated to use in the buffer area, ante-area, or other classified space and are labeled according to their location of use. Pharmacy maintains written policy and procedures regarding maintenance of the reusable cleaning equipment so that repeated use does not increase the bioburden of the controlled environments. **Documentation Required.**				
37	Personnel, whether compounding personnel or housekeeping support personnel, who perform cleaning receive training in and successfully pass initial and ongoing competency assessments conducted by trained and qualified compounding personnel in both of these areas: • Hand hygiene and garbing (which includes gloved fingertip sampling); and • Cleaning and disinfecting.				
38	Only trained personnel clean inside of the ISO Class 5 work areas. Competency assessments shall be performed and documented at least one time per year.[5]				
39	The critical areas where compounding occurs inside the ISO Class 5 environments (including integrated vertical flow ISO 5 workbenches) are cleaned and disinfected at the beginning of each work shift; between batches; every 30 minutes during continuous compounding; when there are spills; and in the event of or suspicion of procedural breach.				
40	Sterile 70% isopropyl alcohol ("IPA") is allowed to remain in contact with surfaces to be disinfected for 30 seconds before compounding activities are started. Sterile 70% IPA is allowed to remain in contact with rubber stoppers and other items for at least 10 seconds.				
41	Easily cleanable horizontal work surfaces in the buffer area, ante area, or segregated compounding areas are cleaned daily. **Documentation Required.**				
42	Floors in the buffer area, ante area, and segregated compounding area are cleaned daily with the designated cleaning agent after compounding has been completed. **Documentation Required.**				
43	Walls, ceilings, emptied shelving, and supply bins in buffer, ante, and segregated compounding areas are cleaned at least monthly with designated cleaning agent. **Documentation Required.**				
	Equipment Calibration				
44	Equipment associated with compounding or used to monitor controlled environments is cleaned, maintained, calibrated and serviced in accordance with manufacturer's recommendations. **Documentation Required.**				
45	Pharmacy maintains written policy and procedures that include specific details about the maintenance, calibration, and cleaning intervals for all pieces of equipment. **Documentation Required.**				
46	Personnel who use equipment have received training and demonstrated the ability to use the equipment properly as well as troubleshoot the equipment in the event of malfunction. Competency assessments shall be performed and documented at least one time per year. **Best Practice. Documentation Required.**				
47	Automated Compounding Devices ("ACD") used for total parenteral nutrition ("TPN") or dialysis compounding are tested at least weekly for volumetric and gravimetric accuracy. **Documentation Required.**				

[5] Refer to USP Chapter <797> Appendix III and V.

Item#	Requirements	Yes	No	N/A	Additional Information
	Temperature and Humidity Monitoring				
48	Temperatures in all controlled storage areas, incubators, and controlled compounding environments are monitored at least once daily and documented (manually or electronically). All drug storage areas conform to Board Policy 2011-01[6] and USP temperature requirements: • controlled room 68ºF – 77ºF (20 – 25ºC) • controlled cold 36ºF – 46ºF (2 – 8ºC) • controlled frozen 14ºF – -13ºF (-10ºC – -25ºC)				
49	Pharmacy maintains policy and procedures detailing reporting excursions, repair defects, protect CSPs, and document actions taken as a result of any out of limit temperature or humidity conditions until resolution. **Documentation Required.**				
	Airflows and Pressure Differential Monitoring				
50	***Non-hazardous CSPs***: Pressure gauges are installed between the nonhazardous buffer area and the ante-area and between the ante-area and the unclassified area which indicate a minimum differential positive pressure of 0.02 inches water column (range of 0.02 to 0.05) between areas. Results documented on a log at least every work shift or by continuous recording device. **Documentation Required.**				
51	***Hazardous CSPs*:** BSC or CACI shall be placed in an ISO Class 7 area that is physically separated (i.e., a different area from other preparation areas) and has not less than 0.01-inch water column negative pressure to adjacent positive pressure ISO Class 7 or better ante-areas, thus providing inward airflow to contain any airborne drug.				
52	Pharmacy maintains written policy and procedures detailing reporting of excursions, repair defects, and document actions taken as a result of any out of limit pressure or airflow condition until resolution. **Documentation Required.**				
	Quality Management				
	Environmental Sampling Program				
53	Pharmacy maintains a written Environmental Sampling Program which is part of the overall quality management program that provides information about the effectiveness of primary and secondary engineering controls (physical plant) and personnel work practices in maintaining a compounding area with sufficiently low viable and non-viable parties. **Documentation Required.**				
54	Environmental sampling (surface sampling, viable and non-viable air sampling) shall occur as part of a comprehensive quality management program and shall occur minimally under any the following conditions: • as part of the commissioning and certification of new facilities and equipment; • following any servicing of facilities and equipment; • as part of the re-certification of facilities and equipment (i.e., every 6 months); • in response to identified problems with end products or staff technique; or • in response to issues with CSPs, observed compounding personnel work practices, or patient-related infections (where the CSP is being considered as a potential source of the infection).				

[6] Policy No. 2011-01: Proper Storage of Refrigerated and Frozen Medications in a Pharmacy Available at http://www.mass.gov/eohhs/gov/departments/dph/programs/hcq/dhpl/pharmacy/pharmacy-regs/policies/2011-01-proper-storage-of-medication.html. Last accessed 3/25/14.

<table>
<tr><th>Item#</th><th>Requirements</th><th>Yes</th><th>No</th><th>N/A</th><th>Additional Information</th></tr>
<tr><td></td><td>Environmental Sampling Program, con't.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>55</td><td>Documentation pertaining to environmental sampling shall contain the following:
date and time of sampling;
sample locations;
method of collection;
frequency of sampling;
volume of air sampled (for viable air sampling); and
time of day in relation to compounding; and action levels.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>56</td><td>Pharmacy maintains written policy and procedures for environmental sampling detailing all aspects of surface sampling and viable air sampling including preparation of plates, labeling of plates according to the Environmental Sampling Plan, reading plates; documentation of results as well as procedure for sending them to contracted lab (in the event that is applicable). Documentation Required.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>57</td><td>Viable air and surface samples are incubated according to the type of collection plate (see below).Regardless of the type of plate, the covers are secured and plates are inverted for incubation (upside down). Pharmacy shall obtain documentation from vendor confirming media types, incubation time, size and quantity of samples, number of CFUs, and speciation of any growth to at least the genus level. Documentation Required. Best Practice.
<table>
<tr><th>Type of Plate</th><th>Temperature</th><th>Time Required</th></tr>
<tr><td>Tryptic soy agar medium with polysorbate and lecithin (TSApl)</td><td>86ºF – 95ºF
(30ºC – 35°C)</td><td>48 – 72 hours</td></tr>
<tr><td>Malt Extract Agar (MEA)</td><td>78ºF – 86ºF
(26ºC – 30°C)</td><td>5 – 7 days.</td></tr>
<tr><td>Other Differentiating Fungal Media Plates</td><td>78ºF – 86ºF
(26ºC – 30°C)</td><td>5 – 7 days.</td></tr>
</table></td><td></td><td></td><td></td><td></td></tr>
<tr><td>58</td><td>Results of viable air and surface sampling are reported by counting the number of discrete colonies forming units (CFUs) per plate. Counts from air monitoring need to be transformed into CFUs per cubic meter of air and evaluated for adverse trends. Documentation Required.</td><td></td><td></td><td></td><td></td></tr>
</table>

Item#	Requirements	Yes	No	N/A	Additional Information
	Environmental Sampling Program, con't.				
59	CFU Action Levels are established for viable air and surface sampling for each ISO Class initially based on data provided in USP Chapter <797> and refined over time based on CFU trends at each sampling location. Action Levels may be refined down but **may not exceed** the limits in USP Chapter <797>. **Minimum Air Sample Action Levels** ISO Class 5 = >1 CFU ISO Class 7 = > 10 CFU ISO Class 8 or worse = > 100 CFU Highly pathogenic microorganisms, including gram-negative rods, coagulase positive staphylococcus, molds, and yeasts = 1 CFU **Minimum Surface Sample Action Levels** ISO Class 5 = >3 CFU ISO Class 7 = > 5 CFU ISO Class 8 or worse = > 100 CFU Highly pathogenic microorganisms, including gram-negative rods, coagulase positive staphylococcus, molds, and yeasts = 1 CFU **Minimum Fingertip Sample Action Levels** ISO Class 5 = >3 CFU				
60	Highly pathogenic microorganisms (e.g., Gram-negative rods, coagualase positive staphylococcus, molds and yeasts) can be potentially fatal to patients receiving CSPs and must be immediately remedied, regardless of cfu count, with the assistance of a competent microbiologist, infection control professional or industrial hygienist. Stop compounding until certification and validation of primary and secondary engineering controls is obtained. **Best Practice.**				
61	Environmental sampling occurs in each of the ISO Class areas and are sampled in the order from the cleanest to dirtiest areas (ISO Class 5, then 7 and then, if applicable, 8). **Documentation Required.**				
62	In the event an action level has been exceeded, all classified areas and PECs shall be re-cleaned and re-sampled. Documentation of re-cleaning, re-testing and test results required. **Documentation Required.**				
63	In the event an action level has been exceeded the pharmacy shall conduct a comprehensive root cause analysis and develop a remedial action plan.[7] **Documentation Required.**				
64	Pharmacy maintains policy and procedures detailing a logical plan of actions to be taken in the event that results of viable air or surface sampling exceed established Action Levels which includes: • examination of samples by an accredited laboratory, • speciation of growth results, • re-evaluation of the adequacy of personnel work practices, cleaning procedures, operational procedures, as well as air filtration efficiency until resolution of the problem is found. **Best Practice**[8] • root cause analysis • development of a remedial action plan **Documentation Required.**				
Item#	**Requirements**	**Yes**	**No**	**N/A**	**Additional Information**

[7] 247 CMR 9.01 (3) ; 247 CMR 15.03 (3)
[8] USP Chapter <797> Appendix I. Principal Competencies, Conditions, Practices, and Quality Assurances

	Viable Air Sampling				
65	Pharmacy performs viable air sampling in each buffer area, ante area, and other classified areas.				
66	Viable air sampling is collected using a volumetric air sampling device.				
67	The volume of the air sample at each sampling location is 400-1000 liters.				
68	Viable air sampling is performed using a general growth medium (i.e., Soybean-Casein Digest Medium) and a medium that specifically supports the growth of fungus (i.e., malt extract agar). **Best Practice for Low and Medium Risk.**				
69	***Low and medium risk*:** Pharmacy performs viable and non-viable air sampling: at the time of the initial certification of new facilities/equipment; subsequent to servicing of the compounding facility or equipment; at least one time per month; **Best Practice** as part of the semi-annual physical plant recertification; and in response to problems with end products, staff technique, CSPs, patient related infections or other undesirable trend. **Documentation Required.**				
70	***High risk*:** Pharmacy performs viable and non-viable air sampling: at the time of the initial certification of new facilities/equipment; subsequent to servicing of the compounding facility or equipment; at least one time per week; **Best Practice** in response to problems with end products, staff technique, CSPs, patient related infections or other undesirable trend. **Documentation Required.**				
	Surface Sampling				
71	Surface sampling is performed using the contact plate and/or swab method.				
72	Surface sampling is performed at the conclusion of compounding and before the area is disinfected.				
73	A plate (size 24-30 cm2, per USP Chapter <1116>) containing tryptic soy agar medium with polysorbate and lecithin (TSApl) added to neutralize cleaning agents is used to collect and incubate each surface sample regardless of whether the method of sampling is by plate or swab.				
74	**Low and medium risk**: Pharmacy performs surface sampling **at least once per month**. **Documentation Required.**				
75	**High risk**: Pharmacy performs surface sampling **at least once per week**. **Documentation Required.**				
76	Media used for surface sampling shall be supplemented with additives to neutralize the effects of disinfecting agents (e.g., TSA with lecithin and polysorbate 80).				
77	After the surface samples have been collected, the sample area is cleaned with an appropriate disinfectant.[9]				
	Non-Viable Particle Testing				
78	Certification of primary (LAFW, CAI, BSC, CACI) and secondary (buffer area and ante areas) engineering controls which includes particle testing is performed every 6 months; whenever a primary engineering control is relocated or subsequent to room repair or major service. **Documentation Required.**				
	General				
79	Pharmacy maintains written policy and procedures to prohibit personnel with rashes, sunburn, open sores, conjunctivitis, and active respiratory infections from preparing compounding CSPs.				
80	The pharmacy maintains a formal, written Quality Assurance/Performance Improvement Plan that considers all aspects of sterile compounding including but not limited to environmental sampling and testing.				
Item#	**Requirements**	**Yes**	**No**	**N/A**	**Additional Information**

[9] Such as sterile isopropyl alcohol (IPA). A rotation of cleaning chemicals to ensure all types of bacteria and germs are killed is often employed. Some types of disinfectant cleaners used in conjunction with sterile IPA are sporicidal cleaners, cleanroom bleach, quaternary ammonium and phenolic cleaning agents. Best Practice

	General, con't.				
81	The Quality Assurance/Performance Improvement Program includes specific monitoring and evaluation activities; details on how results are reported; and delineation of the persons responsible. **Documentation Required.**				
82	Pharmacy maintains a written or electronic personnel file for each pharmacist, pharmacy technician, and pharmacy intern that contains that individual's job description, roles and responsibilities, annual performance evaluation, and documentation of competency assessment. **Documentation Required.**				
83	All compounding personnel (including supervising pharmacists) are required to pass specific didactic coursework; practical skill assessment through competency evaluation; media fill testing and gloved fingertip/thumb sampling which is documented before being allowed to compound sterile preparations. **Documentation Required.**				
84	***Low and medium risk*:** At a minimum, written competency evaluations on Hand Hygiene and Garbing, Cleaning and Disinfecting, and Aseptic Technique; gloved fingertip/thumb sampling; and media-fill tests are successfully completed by all compounding personnel initially and annually thereafter. **Documentation Required.**				
85	***High risk***: At a minimum, written competency evaluations on Hand Hygiene and Garbing (including gloved fingertip/thumb sampling), Cleaning and Disinfecting, and Aseptic Technique; gloved fingertip/thumb sampling; and media-fill testing are successfully completed by all compounding personnel (and supervising pharmacists) initially and semi-annually thereafter. **Documentation Required.**				
86	Compounding personnel (and supervising pharmacists) who fail written exams or media-fill tests are immediately reinstructed and reevaluated by trained and qualified compounding personnel to ensure correction of aseptic processes as well as demonstrate the ability to pass repeated written and/or media-fill tests. Documentation of reinstruction, reevaluation, and retesting required. **Documentation Required.**				
	Gloved Fingertip Sampling				
87	All compounding personnel successfully complete at least 3 gloved fingertip/thumb sampling procedures (success is 0 CFUs) all of which are documented before initially being allowed to compound CSPs. **Documentation Required**				
88	**Low and medium risk**: All compounding personnel perform ongoing Gloved Fingertip/Thumb Sampling of both hands **at least semi-annually** at the time of their employee media fill testing. **Documentation Required. Best Practice.**				
89	**High risk**: All compounding personnel perform Gloved Fingertip/Thumb Sampling of both hands **at least monthly** at the time of their employee media fill testing. **Documentation Required. Best Practice.**				
90	During the gloved fingertip/thumb sampling, fingertip/thumb samples are taken of both gloved hands onto media plates immediately after compounders perform hand hygiene and garbing but *before* their gloves are cleaned with sterile 70% IPA. **Documentation Required.**				
91	After initial qualification, the CFU action level for gloved hands shall be based on the total number of CFU on both gloves and not per hand. Results should be reported separately as number of CFU per employee per hand (left hand, right hand). USP Action Level is >3.				
	Hand Washing and Garbing				
92	Personnel entering controlled areas remove personal outer garments, jewelry, cosmetics, and artificial nails before crossing the line of demarcation on the way to the buffer area.				
93	The order of garbing is generally from dirtiest to cleanest.				
94	Personnel repeat all hand washing and garbing activities if they are exposed to worse than ISO Class 7 air.				
95	After donning dedicated shoes or shoe covers, head and facial hair covers, and face mask, a hand cleansing procedure is performed by removing debris from underneath fingernails using a nail cleaner under warm running water followed by vigorous hand washing.				
96	Hands and forearms are washed to the elbows for at least 30 seconds with soap (either non-antimicrobial or antimicrobial) and water while in the ante-area.				
97	Hands and forearms to the elbows will be completely dried using lint-free non-shedding disposable paper towels.				
98	After completion of hand washing, a non-shedding gown with sleeves that fit snugly around the wrists and enclosed at the neck is donned.				
99	Order of cleansing and gloving: hand cleansing with a persistent active antimicrobial alcohol-based product with persistent activity; allow hands to dry; don sterile gloves.				
100	Personnel repeat all hand washing and garbing if they are exposed to worse than ISO Class 8 air.				

Item#	Requirements	Yes	No	N/A	Additional Information
	Personnel Media-Fill Challenge Testing				
101	Pharmacy maintains written policy and procedures for media fill challenge testing that detail the steps of the personnel media fill procedure. **Documentation Required.**				
102	Media fills are performed under the most challenging dynamic conditions that individual actually faces when he/she prepares CSPs.				
103	Media fills are conducted at the same time as air sampling. **Best Practice.**				
104	Media fills are conducted using microbial growth promotion media, such as Soybein- Casein Digest. Pharmacy shall obtain "Growth Promotion Certificates" from the vendor. **Documentation Required.**				
105	Media fill units are incubated at room temperature (20-25°C) or 30-35°C for a minimum of 14 days and results are documented at the conclusion of the incubation. **Documentation Required.**				
106	***Low and medium risk*:** Each employee successfully completes three media fill tests per day on three consecutive days upon initial employment and at least annually thereafter.[10] **Documentation Required. Best Practice.**[11]				
107	***High risk*:** Each employee successfully completes five media fill tests per day on five consecutive days upon initial employment and at least once every six months thereafter.[12] **Documentation Required. Best Practice.**				
108	One completed media fill from each lot shall be tested post-incubation to confirm the media is able to support microbial growth. **Documentation Required.**				
	Aseptic Technique				
109	No food, drinks, and / or contaminated supplies or equipment in the ante area or buffer area.				
110	Supplies, equipment, and other materials are removed from shipping cartons as well as outer cardboard box / packaging and wiped down with residue free disinfectant prior to entering the buffer area. **Best Practice.**				
111	All supplies and drug components are disinfected with an appropriate cleaning agent prior to being moved into the ISO Class 5 compounding area.				
112	Syringes, needles, and tubing are only opened in ISO Class 5 area[13]				
113	Sterile gloves are used for all sterile compounding, regardless of the type of Primary Engineering Control (PEC).				
114	Personnel routinely inspect sterile-gloved hands for wear and tear and replace gloves as needed.				
115	Compounding personnel routinely disinfect sterile-gloved hands with sterile 70% IPA prior to entering/re-entering an ISO Class 5 area as well as regularly after contacting non sterile objects.				
116	Compounding personnel perform manipulations in the direct compounding area inside of the ISO Class 5 environment in such a way as not to disrupt the flow of first air (HEPA filtered air stream) over critical sites.				
117	Compounding personnel do not expose critical sites to contact contamination or worse than ISO Class 5 air; stoppers, injection ports, ampoule necks are disinfected with sterile 70% IPA for at least ten (10) seconds and allowed to dry each time they are entered.				
118	Compounding personnel inspect each component and supply for visible particulate matter, tampering, breaks in packaging, and other changes which would render the item unacceptable for use in sterile compounding.				

[10] A successful media fill means that all media fill units are free from turbidity (cloudiness) after all 14 days of incubation at the appropriate temperature.
[11] USP Chapter <1116>)
[12] A successfully media fill means that all media fill units are free from turbidity (cloudiness) after all 14 days of incubation at the appropriate temperature.
[13] Kastango, ES, Wagner JT, Kastango KB, Kastango NE, and Wagner TJ. Generation of particulate matter during handling of needle and syringe packaging. *Am J Health-Syst Pharm.* 2008; 65:1443-50.

<table>
<tr><th>Item#</th><th>Requirements</th><th>Yes</th><th>No</th><th>N/A</th><th>Additional Information</th></tr>
<tr><td></td><td>Beyond Use Dating</td><td></td><td></td><td></td><td></td></tr>
<tr><td>119</td><td>BUDs never exceed 45 days. Best Practice.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>120</td><td>If BUDs exceed USP Chapter <797> there is evidence[14] of the process by which BUD and storage conditions are assigned to each specific CSP type prepared by the compounding location.</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Implantable Infusion Pump Reservoir: Beyond Use Dating</td><td></td><td></td><td></td><td></td></tr>
<tr><td>121</td><td>Beyond Use Dating includes the full length of time during which Compounded Sterile Products (CSPs) are present in an implantable infusion pump reservoir. There is evidence[15] that such drugs maintain their stability and sterility for the full length of time the drugs are present in the reservoir of the implantable infusion pump. Documentation Required.</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Sterility & Bacterial Endotoxin Testing of CSPs</td><td></td><td></td><td></td><td></td></tr>
<tr><td>122</td><td>Pharmacy maintains written policy and procedures for sterility testing that include the description of the procedures based on USP Sterility Testing <71>. Documentation Required.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>123</td><td>Pharmacy maintains written policy and procedures for bacterial endotoxin testing that include the description of the procedure and specific endotoxin unit limits based on USP Endotoxin Test <85>. Documentation Required.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>124</td><td>Sterility and bacterial endotoxin testing shall be conducted each time low and medium risk CSPs are compounded and USP Chapter <797> BUD limits are exceeded. Sterility and bacterial endotoxin testing is performed in accordance with USP <71> and <85>.CSPs shall be quarantined with confirmation of sterility and bacterial endotoxin results before dispensing or administering unless there is a documented urgent need to dispense CSP prior to obtaining the results of the sterility and bacterial endotoxin testing. Pharmacy shall document the justification necessitating dispensing at risk each time a low and medium risk CSPs exceeding UPS <797> BUD is dispensed before the receipt of sterility and bacterial endotoxin tests. Documentation Required.
<table>
<tr><th><u>USP Chapter <797></u></th><th>Room Temp</th><th>Cold Temp</th><th>Frozen</th></tr>
<tr><td>Low Risk</td><td>48 hours+</td><td>14 days+</td><td>45 days+</td></tr>
<tr><td>Medium Risk</td><td>30 hours+</td><td>9 days+</td><td>45 days+</td></tr>
<tr><td>High Risk</td><td>24 hours*</td><td>3 days*</td><td>45 days*</td></tr>
</table>
+Sterility and Bacterial Endotoxin Testing Required if USP <797> BUD exceeded
* Sterility and Bacterial Endotoxin Testing Required for ALL High Risk CSPs</td><td></td><td></td><td></td><td></td></tr>
<tr><td>125</td><td>Sterility and Bacterial Endotoxin testing shall be conducted each time high risk CSPs are compounded. All high risk CSPs shall be quarantined with confirmation of sterility and bacterial endotoxin results before dispensing or administering unless there is a documented urgent need to dispense CSP prior to obtaining the results of the sterility testing. Pharmacy shall document the justification necessitating dispensing at risk each time a high risk level CSP is dispensed before the receipt of sterility tests. Documentation Required.</td><td></td><td></td><td></td><td></td></tr>
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[14] Such evidence will be obtained from either scientific evidence from relevant and reliable sources or validation studies by direct testing.
[15] Evidence from either scientific evidence from relevant and reliable sources or direct testing.

Item#	Requirements	Yes	No	N/A	Additional Information
	Sterility & Bacterial Endotoxin Testing of CSPs, con't.				
126	The appropriate number articles shall be tested for sterility in conformance with USP Chapter <71>. Documentation Required				
127	Sterility testing is performed by membrane filtration or direct inoculation and in accordance with USP Chapter<71>. Membrane filtration is preferred. **Documentation Required**				
128	Even when sterility testing is performed, BUD dating **never exceeds** 45 days[16] and there is evidence that BUD dating never exceeds the maximum chemical stability, physical stability, or performance over time of the drug/s in solution based on valid references. **Documentation Required**				
129	Pharmacy maintains written policy and procedures for immediate recall of the dispensed CSPs that includes notification to patient, prescriber, as per 247 CMR 15.03 (1) and Board of Pharmacy, as per 247 CMR 6.15(6). **Documentation Required**				
130	Pharmacy maintains written policy and procedures that specifies actions to be taken in the event of a positive sterility test which may include a rapid and systematic investigation of aseptic technique as well as environmental controls and other sterility assurance controls to identify potential sources of contamination and correct problems in processes or methods. **Documentation Required**				
	Sterilization by Filtration (High Risk)				
131	The pharmacy performs any sterilization by filtration in an ISO Class 5 environment using sterilizing (pharmaceutical) grade, pyrogen-free, 0.2 micron sterile filters, and the process is completed rapidly without replacement of the filter.				
132	Pharmacy maintains written policy and procedures detailing process for sterilization by filtration, including performing a filter integrity test (such as bubble point) at the conclusion of the compounding procedure. **Documentation Required.**				
133	Sterile filters are intended for human-use applications in sterilizing pharmaceutical fluids.				
	Sterilization by Dry Heat (High Risk)				
134	Dry heat sterilization is only used if the materials cannot be sterilized using steam.				
135	CSPs that are sterilized using dry heat are distributed evenly throughout the blower oven. **Documentation Required.**				
136	The effectiveness of dry heat sterilization is verified using appropriate Biologic Indicators of *Bacillus subtilis* in accordance with USP Chapter <1035> and other confirmation methods such as temperature sensing devices. **Documentation Required.**				
137	The oven used is equipped with a system for controlling and recording temperature and exposure time. **Documentation Required.**				
138	Pharmacy maintains written policy and procedures regarding dry heat sterilization that includes conditions and durations for specific CSP types. **Documentation Required.**				
	Steam Sterilization (High Risk)				
139	Prior to steam sterilization, plastic and glass are tightly wrapped in low particle shedding paper or sealed in envelopes that prevent post sterilization microbial penetration.				
140	Steam sterilization of CSPs require the compounded medication to be passed through a filter having a nominal pore size not larger than 1.2µm to remove particulates (but not affect the purity or strength of the medication) immediately prior to filling ampoules and vials that will undergo terminal sterilization (i.e. the final patient CSP, not the intermediate solution is sterilized)				

[16] Best Practice

Item#	Requirements	Yes	No	N/A	Additional Information
	Steam Sterilization (High Risk), con't.				
141	The effectiveness of steam sterilization is verified using appropriate Biologic Indicators of *Bacillus stearothermophilus* in accordance with USP Chapter <1035> and other confirmation methods such as temperature sensing devices.				
142	The steam sterilizer is equipped with a system for controlling and recording temperature and exposure time. **Documentation Required. Best Practice**[17]				
143	Pharmacy maintains a log of temperature and exposure time for each instance steam sterilization is employed. **Documentation Required. Best Practice.**				
144	Pharmacy maintains written policy and procedures for steam sterilization that include conditions and durations for specific CSP types.				
	Depyrogenation by Dry Heat				
145	All glassware, and other containers as appropriate, is depyrogenated by dry heat. **Documentation Required.**[18]				
146	Pharmacy maintains written policy and procedures for depyrogenation by dry heat that includes a description of the cycle and duration of specific load items. **Documentation Required.**				
	Miscellaneous				
147	Pre-sterilization procedures for high risk level CSPs, such as weighing and mixing, shall be completed in no worse than an ISO Class 8 environment.				
148	In order to prevent cross-contamination, designated hood compounding of any penicillin / beta lactam product should be separate PEC from where all other CSPs are compounded. **Best Practice**[19]				
149	Personnel perform proper cleaning and area clearance[20] in between compounding of Penicillin and Beta Lactam CSPs.				
150	Personnel repeat all hand washing and garbing activities in between compounding of Penicillin and Beta Lactam CSPs.				
	Final Release Checks				
151	The pharmacy maintains policy and procedures detailing the process for final release checks of all CSPs. **Documentation Required.**				
152	There is evidence of mechanisms to ensure correct fill volume and quantities for each CSP. **Documentation Required.**				
153	There is evidence of mechanisms to ensure that the identities, purities, and amounts of ingredients are correct by comparing the original written order with the compounding record				
154	Compounding personnel shall visually confirm that ingredients measured during compounding match the written order being compounded. All used containers, whether empty or partially full and the syringes used to measure the additives are retained with the compounding worksheets/batch records and final CSPs until the final volume check is completed.				
155	The final release check is performed by the Pharmacist preferably a person other than the compounder will verify that correct volumes of correct ingredients were measured to make each CSP.				
Item#	**Requirements**	**Yes**	**No**	**N/A**	**Additional Information**
	Final Release Checks, con't.				

[17] USP <797> Appendix I

[18] Materials must be able to withstand dry heat.

[19] April 2013 guidance document released by FDA entitled "*Non-Penicillin Beta-Lactam Drugs: A Current Good Manufacturing Practice (CGMP) Framework for Preventing Cross-Contamination*."

[20] Area Clearance is a manufacturing term which applied to a set of activities that is meant to control the procurement, segregation, and movement of supplies, components, and documentation of a specific batch (or patient specific formulation) throughout the compounding process.

156	The pharmacist routinely inspects prescription orders, labels, compounding documentation, and expended materials to verify that the correct identity and amounts of ingredients, aseptic mixing and sterilization, packaging, labeling, and expected physical appearance are consistent with expectations before they are dispensed.				
157	The pharmacist checks labels for correct names, amounts, and/or concentrations of ingredients, total volume, BUD, route of administration, storage conditions, and other appropriate usage information before they are dispensed.				
158	After compounding is completed, Pharmacist visually examines CSPs for the presence of particulate matter against a lighted white and black background and not dispensed if particulates are observed. Using a high intensity LED light (such as a LED flashlight) in addition to a lighted white and black background is recommended. Best Practice. **Documentation Required.**				
159	Finished CSPs are visually inspected for container closure integrity (e.g., holes, leakage) and any other potential defect. **Documentation Required.**				
160	CSPs with observed defects are marked and segregated from CSPs ready for use in a manner that prevents their dispensing.				
161	If CSPs are not distributed immediately after compounding and are stored in the pharmacy for some period of time, a pre-release check is performed to ascertain container defects/damage, particulates, or other unexpected and undesirable circumstance.				
162	If any out-of-limits (e.g., cloudiness, defects, particulate matter, foreign matter, leakage, precipitates, etc.) findings occur, a root cause analysis is performed according to SOPs and the results documented. **Documentation Required**.				
	Inventory Storage and Handling/Delivery of CSPs				
163	The methods used to transport CSPs to the patient prevent damage and maintain appropriate temperatures during transit.				
164	Storage of finished CSPs and drug components is separate from food storage and from any specimen storage (if occurs onsite).				
165	There is evidence that packaging, containers, and materials maintain physical integrity, sterility, stability, and purity of CSPs. **Best Practice.**				
	Hazardous Drug Compounding				
166	The pharmacy identifies, in writing, hazardous drugs and maintains written policy and procedures detailing the storing, handling (including appropriate personal protective equipment), labeling and disposing requirements. Refer to National Institute of Occupational Safety and Health (NIOSH)[21]				
167	Before using a medication new to the pharmacy, the pharmacy determines whether the medication is hazardous and the appropriate storing, handling (including appropriate personal protective equipment), labeling and disposing requirements.[22]				
168	Personnel who handle, dispose, or compound hazardous CSPs are trained and a competency assessment performed prior to allowing personnel to compound or handling hazardous drugs, hazardous CSPs and hazardous waste. Competency to be updated annually. training shall be verified by testing specific hazardous drug preparation techniques (updated annually) **Documentation Required.**				
169	Personnel who handle hazardous CSPs are fully trained in all of the following: • storage, handling, and disposal of hazardous drugs; • containment, cleanup, and disposal procedures for spills; • treatment of exposed personnel; • negative pressure techniques inside of BSC/CACI; • correct use of Closed System Transfer Devices (CSTDs) if applicable				
Item#	**Requirements**	**Yes**	**No**	**N/A**	**Additional Information**
	Hazardous Drug Compounding, con't.				

[21] NIOSH List of Antineoplastic and other Hazardous Drugs in Healthcare Settings. Available at www.cdc.gov/niosh/docs/2012-150/pdfs/2012-150.pdf. Last Accessed 3/24/14

[22] Work Precautions for Handling Hazardous Drugs Highlighted by NIOSH, OSHA and Joint Commission. Available at http://www.cdc.gov/niosh/nppm/upd-04-08-11.html Last accessed 3/24/14.

170	There is written confirmation by all compounding personnel of reproductive age (male and female) that they understand the risk of handling hazardous CSPs.				
171	Hazardous drugs are handled with caution at all times using appropriate personal protective equipment (nitrile gloves, gowns, etc.) during receiving, distribution, stocking, inventorying, preparing for administration, and disposal.				
172	Personnel who compound hazardous CSPs use appropriate personal protective equipment including chemotherapy rated protective gowns, face masks, eye protection, shoe covers (or dedicated shoes), and double gloving with sterile nitrile gloves in addition to standard garbing items and procedure.				
173	Hazardous CSPs are prepared in an ISO Class 5 BSC or a CACI (that meets or exceeds the standards for CACI in USP Chapter <797>). Hazardous CSPs may not be prepared in a laminar airflow workbench (e.g., LAFW) or other type of positive-pressure primary engineering control (PEC).				
174	Hazardous CSPs are prepared in a BSC or CACI that is located inside of an ISO Class 7 area that is physically separate from other areas (not in the same room as nonhazardous drug compounding) and has not less than 0.01 inches water column negative pressure to adjacent positive pressure ISO Class 7 ante-area.				
175	The biological safety cabinet (BSC) used for the preparation of hazardous drugs (HDs) is 100% exhausted outside of the building by HEPA filtration. **Best Practice.**				
176	The hazardous drug compounding buffer area has been certified to have at least 30 air changes per hour (ACPH) from the HEPA filtered air supplied to the room. **Best Practice.**				
177	The pharmacy stores hazardous CSPs, hazardous ingredients, and hazardous drugs used in compounding of sterile products (including in a negative pressure room such as the hazardous drug compounding room or a cabinet under negative pressure in an unclassified space.				
178	Hazardous CSPs, hazardous ingredients, and hazardous drugs are stored separately from other inventory in a manner to prevent contamination and personnel exposure.				
179	The storage area for hazardous drugs has exhaust ventilation (negative pressure) of at least 12 ACPH to dilute and remove potential airborne contaminants. **Best Practice.**				
180	Hazardous CSPs and hazardous drug waste are disposed of in a manner that complies with local, state, and federal regulations.				
181	Prior to disposal, hazardous drug waste, including expired hazardous drugs, are stored in a marked quarantine area within a designated hazardous drug storage area. **Best Practice.**				
	Allergen Extracts as CSPs				
182	Compounding of allergen extracts is limited to simple transfer of commercial sterile allergen products and appropriate sterile added substances via sterile needles and syringes.				
183	Allergen extracts compounded contain preservatives or substances to prevent the growth of microorganisms.				

Signature Page

I have participated in a sterile preparation compounding inspection and have reviewed the findings with the investigator(s). The pharmacist Manager of Record will provide a plan of correction for all observed deficiencies within 15 business days.

Print Name:	**Signature:**
Title:	**License Number:**
Investigator:	**Date:**
Investigator:	**Date:**

The deficiencies cited in this Inspection Report are not intended to be an all-inclusive list of deficiencies that exist at your facility. You are responsible for investigating and determining the causes of the deficiencies identified and for preventing their recurrence and the occurrence of other deficiencies.