The USP also has specific guidance, not repeated here, for determination of volume of injection for the following special containers: multiple dose, containers with oily contents, cartridges, syringes, and large-volume solutions.

Printing on Ferrules and Cap Overseals

Only cautionary statements are to be printed on these parts of the drug product container. The printing must be of contrasting color and conspicuous under conditions of use. Examples of cautionary statements include "Warning," "Dilute Before Using," "Paralyzing Agent," "IM Use Only," and "Chemotherapy".

Packaging and Storage

This USP segment summarizes the requirements for packaging of different types of injectable products.

1. No more than 1 L of injection volume may be withdrawn and administered at one time.
2. Preparations for intraspinal, intracisternal, or peridural injections may be packaged only in single-dose containers.
3. Unless an individual monograph specifies differently, a multiple-dose container may contain no more than 30 mL volume of injection.
4. Injections packaged for use as irrigation solutions, for hemofiltration or dialysis, or for parenteral nutrition are exempt from the 1-L restriction stated in #1.
5. Containers for injections packaged for use as hemofiltration or irrigation solutions may be designed to empty rapidly (e.g., the closure is a screw-cap rather than a rubber closure) and may contain a volume more than 1 L.
6. Injections labeled for veterinary use are exempt from packaging and storage requirements concerning the limitation to single-dose containers and the limitation on the volume of multiple-dose containers.

Foreign and Particulate Matter

All products intended for parenteral administration shall be prepared in a manner designed to exclude particulate matter as defined in Particulate Matter in Injections <788> and other foreign matter. Versions of the USP through 2005 made the following statement:

> Every care should be exercised in the preparation of all products intended for injection to prevent contamination with microorganisms and foreign material. Good pharmaceutical practice requires also that each final container of injection be subjected individually to a physical inspection, whenever the nature of the container permits, and that every container whose contents show evidence of contamination with visible foreign material be rejected.

The statement was revised in 2006 to read as follows:

> Each final container of all parenteral preparations shall be inspected to the extent possible for the presence of observable foreign and particulate matter ("visible particulates") in its contents. The inspection process shall be designed and qualified to ensure that every lot of all parenteral preparations is essentially free from visible particulates. Qualification of the inspection process shall be performed with reference to particulates in the visible range of a type that might emanate from the manufacturing or filling process. Every container whose contents show evidence of visible particulates shall be rejected. The inspection for visible particulates may take place when inspecting for other critical defects, such as cracked or defective containers or seals, or when characterizing the appearance of a lyophilized product.

Phrases such as "whenever the nature of the container permits," "to the extent possible," "foreign" and "essentially free" are controversial (see chapter 22). Manufacturers who need to use amber or other colored containers to inhibit light from entering the container might use the statement "whenever the nature of the container permits" to justify not performing physical inspections for particles and foreign matter. Regulatory inspectors will greatly frown on this. USP added verbiage requiring supplemental inspections, such as withdrawing contents from containers that limit inspection capabilities. The term "foreign material" has been applied to