by distillation or by reverse osmosis and meets the same standards for the presence of total solids as does *Purified Water, USP*—that is, not more than 1 mg/100 mL Water for Injection, USP—and may not contain added substances. Although water for injection is not required to be sterile, it must be pyrogen-free. The water is intended to be used in the manufacture of injectable products to be sterilized after preparation. Water for injection should be stored in tight containers at temperatures below or above the range in which microbial growth occurs. Water for injection is intended to be used within 24 hours after collection. Naturally, the water should be collected in sterile and pyrogen-free containers. The containers are usually glass or glass lined.

Sterile Water for Injection, USP, is packaged in single-dose containers not larger than 1 L. As with water for injection, it must be pyrogen-free but does have an allowable endotoxin level, not more than 0.25 USP EU/mL. Also, it may not contain any antimicrobial agent or other added substance. This water may contain slightly more total solids than water for injection because of the leaching of solids from the glass-lined tanks during sterilization. This water is intended to be used as a solvent, vehicle, or diluent for already sterilized and packaged injectable medications. The 1-L bottles cannot be administered intravenously because they have no tonicity. Thus, they are used for reconstitution of multiple antibiotics. In use, the water is aseptically added to the vial of medication to prepare the desired injection. For instance, a suitable injection may be prepared from the dry powder Sterile Ampicillin Sodium, USP, by aseptic addition of sterile water for injection.

Bacteriostatic Water for Injection, USP, is sterile water for injection containing one or more suitable antimicrobial agents. It is packaged in prefilled syringes or in vials containing not more than 30 mL of the water. The container label must state the names and proportions of the antimicrobial agent or agents. The water is employed as a sterile vehicle in the preparation of small volumes of injectable preparations. Theoretically, presence of the bacteriostatic agent gives the flexibility for multiple-dose vials. If the first person to withdraw medication inadvertently contaminates the vial contents, the preservative will destroy the microorganism, although there has been debate on how much protection the antimicrobial agent can provide in a multiple-dose vial (4). Because of the presence of antimicrobial agents, the water must be used only in parenterals that are administered in small volumes. Its use in parenterals administered in large volume is restricted by the excessive and perhaps toxic amounts of the antimicrobial agents that would be injected along with the medication. Generally, if more than 5 mL of solvent is required, sterile water for injection rather than bacteriostatic water for injection is preferred. In using bacteriostatic water for injection, due regard must also be given to the chemical compatibility of the bacteriostatic agent or agents with the particular medicinal agent being dissolved or suspended.

USP labeling requirements demand that the label state NOT FOR USE IN NEONATES. This statement was the result of problems encountered with neonates and toxicity of the bacteriostat, that is, benzyl alcohol. This toxicity results from the high cumulative amounts (milligrams per kilogram) of benzyl alcohol and the limited detoxification capacity of the neonate liver. This solution has not been reported to cause problems in older infants, children, or adults.

Benzyl alcohol poisoning is recognized as gasping syndrome. In one study, 10 premature infants developed this clinical syndrome characterized by the development of multiorgan failure and eventually died (5). The typical clinical course included metabolic acidosis, respiratory distress requiring mechanical ventilation, central nervous system dysfunction, hyperactivity, hypotonia, depression of the sensorium, apnea, seizure, coma, intraventricular hemorrhage, hepatic and renal failure, and eventual cardiovascular collapse and death. In the study, the amount of benzyl alcohol received ranged from 99 to 234 mg/kg/d. Based on the concentration of 0.9% benzyl alcohol in the bacteriostatic water for injection and sodium