Development of an IV Fluid Production Device for Ground and Space Use
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- **Objectives**
  - Develop a device which produces sterile water for medical uses from regular drinking water
  - Device to be handheld, small and compact, and easy-to-use
  - Use on the ground and potentially in space

Development of an IV Fluid Production Device

- **Approach**
  - Initial review of former work
  - Defined device desired parameters (size, weight, production rate, ease of use)
  - Identified or developed filters
  - Tested water samples through device to get the best combination, flows, and sequence of filters

- **Results**
  - Developed a single 2-filter device
  - Dimensions = 25L x 13W x 7.5H cm (~10L x 5W x 3H in)
  - Weight = 1 kg (2.2 lbs)
  - Flow rate = 1 liter per 21 minutes
  - Capacity = Several hundred liters
  - Product water satisfies all parameters of United States Pharmacopeia (USP) for Sterile Water for Injection

- **Conclusions**
  - This project developed a very small and portable hand-held device capable of filtering regular drinking water within minutes into medical grade sterile water suitable for intravenous use. No other portable device producing water meeting USP standards for Sterile Water For Injection currently exists in the world.
  - Potential world-wide use is tremendous in medical activities with limited storage space or limited resources, e.g., space operations, military operations, humanitarian relief efforts, on submarines, cruise ships, etc.

Source Water Bag

Filter #1

Pump

Filter #2

Collection bag