line check valves. The filled collection bag is disconnected from its tubing and is ready for use. The source bag can be refilled for production of multiple liters, or the source bag can be replaced with an input tube that can be placed in a larger potable water source if the device is attended. The device functions in all orientations independent of any gravity fields.

In addition to creating IV fluids, the device produces medical-grade water, which can be used for mixing with medications for injection, reconstituting freeze-dried blood products for injection, or for wound hydration or irrigation.

Potential worldwide use is expected with medical activities in environments that have limited resources, storage, or resupply such as in military field operations, humanitarian relief efforts, submarines, commercial cruise ships, etc.

This work was done by Philip J. Scarpa of Kennedy Space Center and Wolfgang K. Scheuer of Tiger Purification Systems, Inc. For more information, contact Dr. Philip Scarpa at (321) 867-6386 or Philip.J.Scarpa@nasa.gov. KSC-13598

Adaptation of a Filter Assembly to Assess Microbial Bioburden of Pressurant Within a Propulsion System

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A report describes an adaptation of a filter assembly to enable it to be used to filter out microorganisms from a propulsion system. The filter assembly has previously been used for particulates >2 μm. Projects that utilize large volumes of nonmetallic materials of planetary protection concern pose a challenge to their bioburden budget, as a conservative specification value of 30 spores/cm^3 is typically used.

Helium was collected utilizing an adapted filtration approach employing an existing Millipore filter assembly apparatus used by the propulsion team for particulate analysis. The filter holder on the assembly has a 47-mm diameter, and typically a 1.2-5 μm pore-size filter is used for particulate analysis making it compatible with commercially available sterilization filters (0.22 μm) that are necessary for biological sampling.

This adaptation to an existing technology provides a proof-of-concept and a demonstration of successful use in a ground equipment system. This adaptation has demonstrated that the Millipore filter assembly can be utilized to filter out microorganisms from a propulsion system, whereas in previous uses the filter assembly was utilized for particulates >2 μm.

This work was done by James N. Benardini, Robert C. Koukol, Wayne W. Schubert, Fabian Morales, and Marlin F. Klatte of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).
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