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## Dehydrating and Sterilizing Wastes Using Supercritical CO<sub>2</sub>

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A relatively low-temperature process for dehydrating and sterilizing biohazardous wastes in an enclosed life-support system exploits (1) the superior mass-transport properties of supercritical fluids in general and (2) the demonstrated sterilizing property of supercritical CO<sub>2</sub> in particular. The wastes to be treated are placed in a chamber. Liquid CO<sub>2</sub>, drawn from storage at a pressure of 850 psi (≈5.9 MPa) and temper-

ature of 0 °C, is compressed to pressure of 2 kpsi (≈14 MPa) and made to flow into the chamber. The compression raises the temperature to 10 °C. The chamber and its contents are then further heated to 40 °C, putting the CO<sub>2</sub> into a supercritical state, in which it kills microorganisms in the chamber. Carrying dissolved water, the CO<sub>2</sub> leaves the chamber through a back-pressure regulator, through which it is ex-

panded back to the storage pressure. The expanded CO<sub>2</sub> is refrigerated to extract the dissolved water as ice, and is then returned to the storage tank at 0 °C.

*This work was done by Ian J. Brown of Lynntech, Inc. for **Johnson Space Center**. For further information, contact the Johnson Technology Transfer Office at (281) 483-3809. MSC-23495*