Non-Confidential Description - PSU No. 4580
“Improved Heater Cooler Unit for Cardiopulmonary Bypass with Sterile, Disposable Water Tank”

**Keywords:**
Cardiopulmonary bypass, CPB, surgery

**Inventors:**
John L. Myers, William Weis, Gerson Rosenberg

**Background**

Heart surgery in patients that includes cardiopulmonary bypass (CPB) often requires a heater/cooler device (HCD). The HCD keeps the patient cooled to temperatures low as 17 degrees Celsius so their circulation can be completely stopped to facilitate the surgical repair. The HCD can also re-warm the patient to normal body temperature following surgery.

In recent years, there have been reports of nontuberculous mycobacteria (NTM) infections in cardiac surgery patients. These infections are rare but serious and sometimes fatal. The NTM has been linked to common models of HCD; the NTM grows in the stagnant water in the HCD’s water tank. This water can be vaporized by the HCD’s cooling fans and reach the patient’s incision causing the infection. Current HCDs are not designed to isolate the water from contamination or to prevent the escape of the water into the air.

**Invention Description**

This invention discloses an HCD that does not allow for the accumulation of microbes in its water tank and prevents water in the unit from entering the air. This novel HCD has its water reservoir within a self-contained section that can be removed from the main body of the HCD and disposed. This water reservoir is sealed, sterile, and has a lower volume than previous models.

**Advantages/Applications**

- Sealed, sterile, disposable water reservoir; no risk of NTM infestation
- Requires less than 2 liters of sterile water; current models use 9-17 liters
- Cost-effective; decontaminating current models is an expensive process

**Patent Status**

Provisional pending. Filed 6/22/2017.