# RainCloud: Water Conserving Hand Sanitation Device

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As a reaction to Behind the Beautiful Forevers, a narrative chronicling the lack of sanitation in Mumbai slums, I engineered RainCloud, a financially feasible water conserving hand sanitation device which functions independent of a region's water infrastructure. Implementation of RainCloud will save lives; two million people die annually from dysentery. RainCloud will also reduce global poverty as a recent MIT study linked poor sanitation to extreme poverty. Utilizing early design concepts developed in last year's project, newly established design criteria required the RainCloud device more fully address the needs of areas without plumbing. By conserving 95% of water compared to traditional manual faucets, being fabricated from non-corrosive materials to be refillable and reusable, dispensing water consistently, sealing passively, and being designed to minimize production costs, RainCloud would be an effective sanitation device which could be broadly adopted for sustainable philanthropic distribution. Four additional prototypes were designed, tested, and compared to the established design criteria; the final prototype met all of the established design criteria. The injection molded device, press fit into a globally available 2-liter bottle, allows water to flow upon the application of an upward force. Partnering with Utah State University's Engineers Without Borders, student engineers will field test the current RainCloud design in rural Mexico and Peru to ensure the device's viability prior to its manufacture and before large-scale distribution. RainCloud is anticipated to decrease the prevalence of disease in poorly infrastructured living areas, creating a projected global decline in both mortality and poverty.

**Awards Won:**