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Problem and Clinical Need

- Consumption of unclean water is a direct threat to public health in areas with poor infrastructure!
- Can cause dehydration, fever, and muscle aches, and death!
- Approximately 3.4 million people die each year from a water related disease, and 780 million people worldwide lack access to clean water[1]!
- Need a solution that provides safe, accessible drinking water for disaster relief and low-resource areas!
- We intend to provide short-term clean water at a lower cost than current industrial products and offer a large-scale deployable solution!

Innovation behind D.E.W.

- New filter paper called p[Ag]e !
- Embedded with silver nanoparticles!
- Novel in its ease of use and low-cost production
 Eliminates both suspended particles and harmful microorganisms from contaminated water !
- Easier to transport, distribute, and use in comparison to other current water purification techniques!

Usability

Extensive usability studies were conducted during initial prototyping stages and for the final prototype!

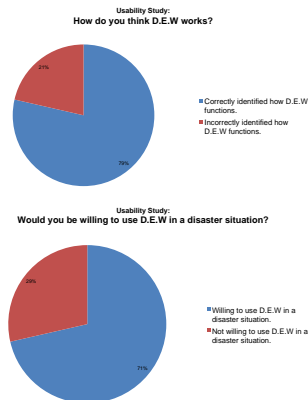
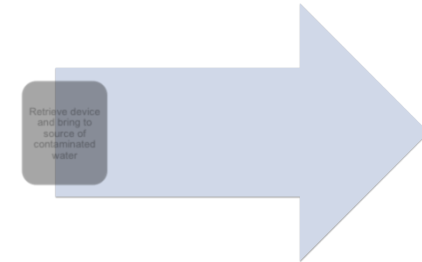


Figure 1: Results of usability studies after interviewing 14 individuals using the most recent iteration of the prototype !

Description of Design

Our design is a uniquely shaped plastic bag with an incorporated filter and drinking straw. The device is used when the only sources of drinking water are biologically or physically contaminated.!

How to Use DEW



Estimation of Product Costs

Our product is expected to cost less than \$2.10 per device. Below is a breakdown of our anticipated costs per unit when manufacturing in batches of 10,000 units.!

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Assuming similar manufacturing techniques of our prototype manufacturing, the total manual and labor cost includes:

- Manual heat welding!
- Using adhesive to bond filter to plastic!

Costs are and can be further reduced from.!

- Using existing and/or non-specialized machinery!
- Automating welding process!
- Eliminating adhesive and use an overmolding process!

Acknowledgements

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References

[1] ! " #\$\$\$%&&'&! (*)+&%, +-./0. *)+ 1(* /1-, 2+! %3)0-, 0-0%- *%4 !

Figure 2: Proposed final design with all the parts of the prototype labeled!

The device is largely made of flexible HDPE (high density polyethylene) film, and the p[Ag]e filter is blotter paper soaked in a silver nitrate and glucose solution, which is then microwaved or baked until dry.!

Figure 3: A conceptual drawing of our final prototype (left) and our final prototype (right) !

Current Options

- PUR Packets by Proctor & Gamble !*
- In use in low-resource environments.!
 - Each packet can purify up to 10 liters of water!
 - Requires multiple steps, specified waiting times, and equipment!