B-Quenched.

Mockup Review
Orange B
Clean water isn’t always easy to find
Many products exist…
“[There was] a high risk of contaminating the filtered water.”

“The unit was simply unusable for the sheer difficulty of cranking it.”
# B-Quenched Product Contract

<table>
<thead>
<tr>
<th>Customer Need</th>
<th>Product Attribute</th>
<th>Engineering Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to carry</td>
<td>Weight + Size*</td>
<td>Weight (\leq 1) kg</td>
</tr>
<tr>
<td></td>
<td>*excluding bottle</td>
<td>Size (\leq 1) L</td>
</tr>
<tr>
<td>Fast to set up</td>
<td>Setup Time</td>
<td>Setup Time (\leq 60) s</td>
</tr>
<tr>
<td>Easy to crank</td>
<td>Crank Time + Ergonomics</td>
<td>Crank Time (\leq 90) s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ergonomics qualitatively deemed comfortable</td>
</tr>
<tr>
<td>Sufficient amount of water</td>
<td>Drinking Volume</td>
<td>Bottle (\geq 1) L</td>
</tr>
<tr>
<td>Works with dirty + contaminated</td>
<td>Filters + Sanitizes</td>
<td>Contaminant + Bacterial test reveals none</td>
</tr>
<tr>
<td>water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mockup **Key Risks**

- form factor
- durability and reliability
- crowded market
- UV light effectiveness
- power
Form Factor
Durability and Reliability

Prevent cross contamination
- Two-layer water bottle

Filter a wide range of contaminants
- Standard filter
- Multimedia filter
- UV light
## Existing Products

<table>
<thead>
<tr>
<th>Feature</th>
<th>Product 1</th>
<th>Product 2</th>
<th>Product 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deals with viruses, bacteria, protozoa</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>UVC sterilization</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>&lt;2 micron filter</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Time to clean 1L water</td>
<td>90 s</td>
<td>1 hr</td>
<td>90 s</td>
</tr>
</tbody>
</table>
Effectiveness of UV Light

E. coli bacteria

10^5 bacteria/plate

10^7 bacteria/plate

Exposure to UVC light (seconds)

https://www.researchgate.net/figure/24024984_fig6_Figure-8-Growth-of-E-coli-on-Nutrient-Agar-plates-after-exposure-to-different-doses-of
Power requirements

- Average continuous power that can be generated by pedaling is **125 watts**
- Powering 10 watt UVC bulb
Hiking:
>140 million Americans in 2012

$120 billion market in outdoor recreation product sales

Disaster relief:
23.9 million displaced in 2016

$11.92 billion expected market by 2020

Projected Price

Similar sanitizing water bottles ~$80

Potential savings over bottled water ($44/month for 4 people)

$100

Plastic: $23
Bulb: $12
Generator: $55
Markup: $10
B-Quenched.
Clean, safe, quenched.