Solar-Powered Water Purifier

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Over a billion people around the world lack access to clean drinking water. Millions of them die from the contaminated water, the majority of whom are from developing countries. Tap water can become even more dangerous to drink after a natural disaster. In response, I decided to create a solar-powered water purification system—all within the means of a simple and convenient water bottle. The bottle cap features a UVC LED that shines through the water to destroy the DNA of pathogens by forming thymine dimers. The pathogens cannot become resistant to the UVC light. This UVC LED is powered by solar, especially helpful in times of no or limited electricity. There is a battery for storage and an emergency radio or battery pack can also be plugged in for backup. The bottle can also power other electronics such as a phone. The UVC LED activates by pushing a button and deactivates—automatically—once the bacteria and viruses have been killed. This is a cheap, quick, and chemical-free method of disinfecting water. Furthermore, to accommodate more people and circumstances, the cap can fit on top of the ubiquitous aluminum soda can. This means any standard soda can is reusable for water purification. The bottle can be used by anyone and everyone.

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