Green Water
Portable, Solar Powered Water Purifier/Desalinator

Health

1.1 billion people in developing countries have inadequate access to water, and 2.6 billion lack basic sanitation.

1.8 million child deaths each year as a result of drinking unclean water.

Recent and continuing changes in climate have stripped populations around the globe of their traditional sources of clean water.

The consumption of seawater can lead to dehydration causing seizures, brain damage, and unconsciousness.

Overview

The GREEN WATER purification system provides an inexpensive method for cleaning water.

It does not rely on external power sources or a regular supply of chemicals.

The first stage is a porous filter meant to remove any large particles.

The second stage eliminates biological contaminants through electrolysis.

The final stage removes the all remaining particles leaving drinkable water.

Electrolysis

Electrical current passed through water molecules causes them to split into ions, (H+, O- and OH-).

These ions are highly reactive and when they come in contact with any living cells, like bacteria, viruses, parasites, the ions will kill the cell.

This process also creates a magnetic field causing the ions to move through the water.

Increasing the voltage will cause charge to build up faster in the water, increasing the rate at which electrolysis occurs.

Increased rate of charge, or current, will help kill any contamination faster.

Desalination

Water streamed between two oppositely charged electrodes.

Salt ions attracted to oppositely charged sides.

Porous carbon traps these ions.

Fresh water exits.

Power

Photovoltaic (PV) cells absorb light transferring energy, knocking free lose electrons.

These electrons follow electric fields created by PV cells inducing current.

The solar power recharges a Lithium-Ion battery.

Operating from a battery allows our machine to run in overcast and at night.

Panayotatos
Alexander Chopyk, David Tulchinsky
Charead Alano, Ryan Purdom
Thomas Merichko
Advisor: Paul Panayotatos