

A serene landscape with misty mountains and a calm lake reflecting the scene. The mountains are covered in dense green forests, and the water is still, creating a perfect reflection of the surrounding scenery. The overall tone is peaceful and natural.

Innovation Park Water

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Acknowledgements

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Motivation

- Flint Michigan
 - Developed into focus on underdeveloped countries
- A lot of energy usage in water plants
 - alternative energy sources
- High price for water distillation
- No chemistry or biology background

Background

- U.S. citizen uses 300-500 liters a day
 - Person in Africa uses 20-50 liters a day
 - Person in Asia uses about 100 liters a day
- Portable/small water distillation devices take 8 hours to distill 5 liters
 - Eliodomestico
- Water distillation plants take all day to get 1 liter of water
 - Using solar desalination



Question

Can a water filter be modified by incorporating solar electricity, an activated carbon filter, and safe water storage, to minimize the time taken to purify water and prevent recontamination?

Hypothesis

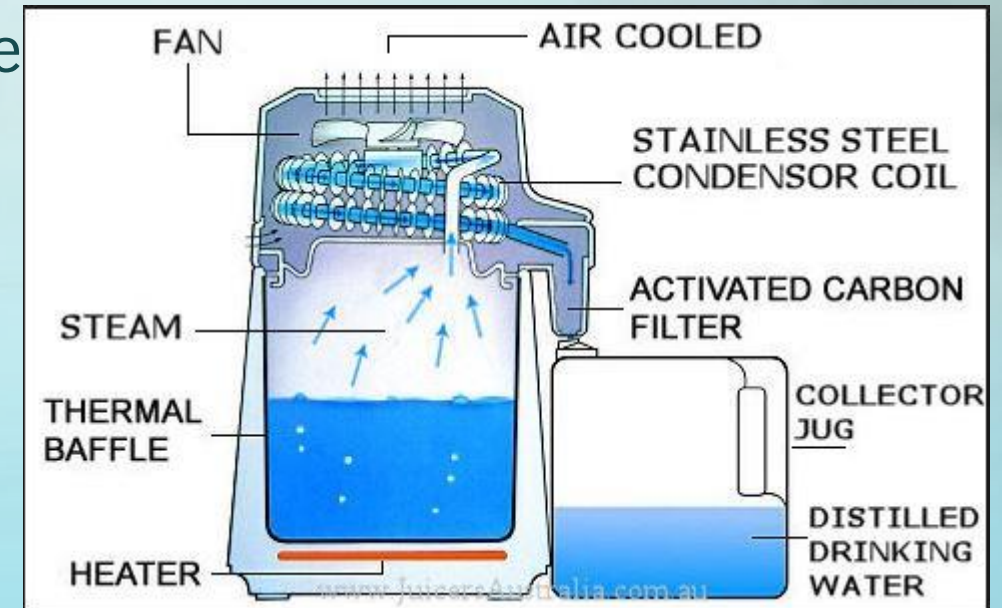
If a water purification device includes an activated carbon filter and is combined with solar panels, then the amount of time needed to conduct solar desalination will decrease and improve safe water storage.

Materials

- Noryl plastic
- Aluminum heater
- Steel condenser coil
- Thermometer
- TDS water purity tester
- Saltwater
- Activated carbon filter
 - Remove taste/odor, chlorine, sediment, etc
- Container for safe water storage
- Fan
- Timer
- Solar Panels
- Wires

Methods

- Design/modify water purification device
- Construct two plastic chambers
 - Evaporation and condensation
- Connect chambers to form the device
 - Steel condenser coil between chambers
 - Carbon filter after second chamber
- Test of each chamber
- Test the device as a whole



Data Collection

1. Salinity of water before desalination
2. Does the first chamber reach high enough temperatures to boil water
3. Does the second chamber cool temperature enough for condensation
4. Salinity of water after it passes through the carbon filter

Extensions

- Testing the device with murky water
- Continuing to increase the efficiency of the filter

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