In an emergency, your mattress can clean your water!

Multistage Reticulated Polyurethane Foam Filter for Emergency and Community Drinking Water Supply

World Water Crisis

Dirty influent and clean effluent water

- The World Health Organization reports **1.73 million deaths** annually attributed to poorly treated water.
- Although the proportion of people with access to **IMPROVED** drinking water is rising, there are still communities worldwide, especially in the developing world, living without **SAFE** drinking water.

Our Mission

- Use **novel** technologies to design a reliable and efficient **water filtration system** for disaster relief and for small communities.
- **Sustainably** provide safe, clean water for communities without the use of electricity or proprietary components.
- Improve quality of life through community outreach and education.

Community Education Program in Honduras

Cornell University

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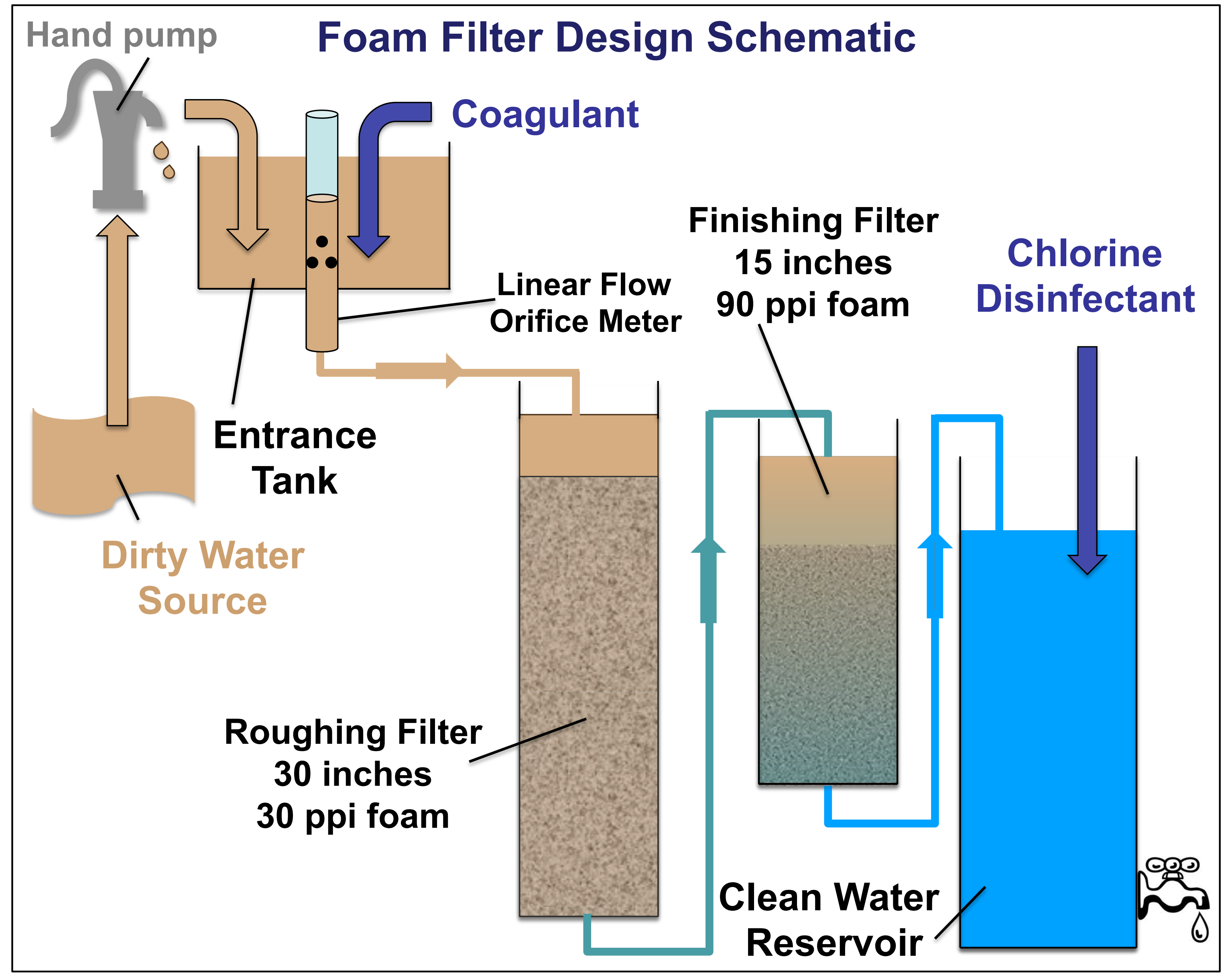
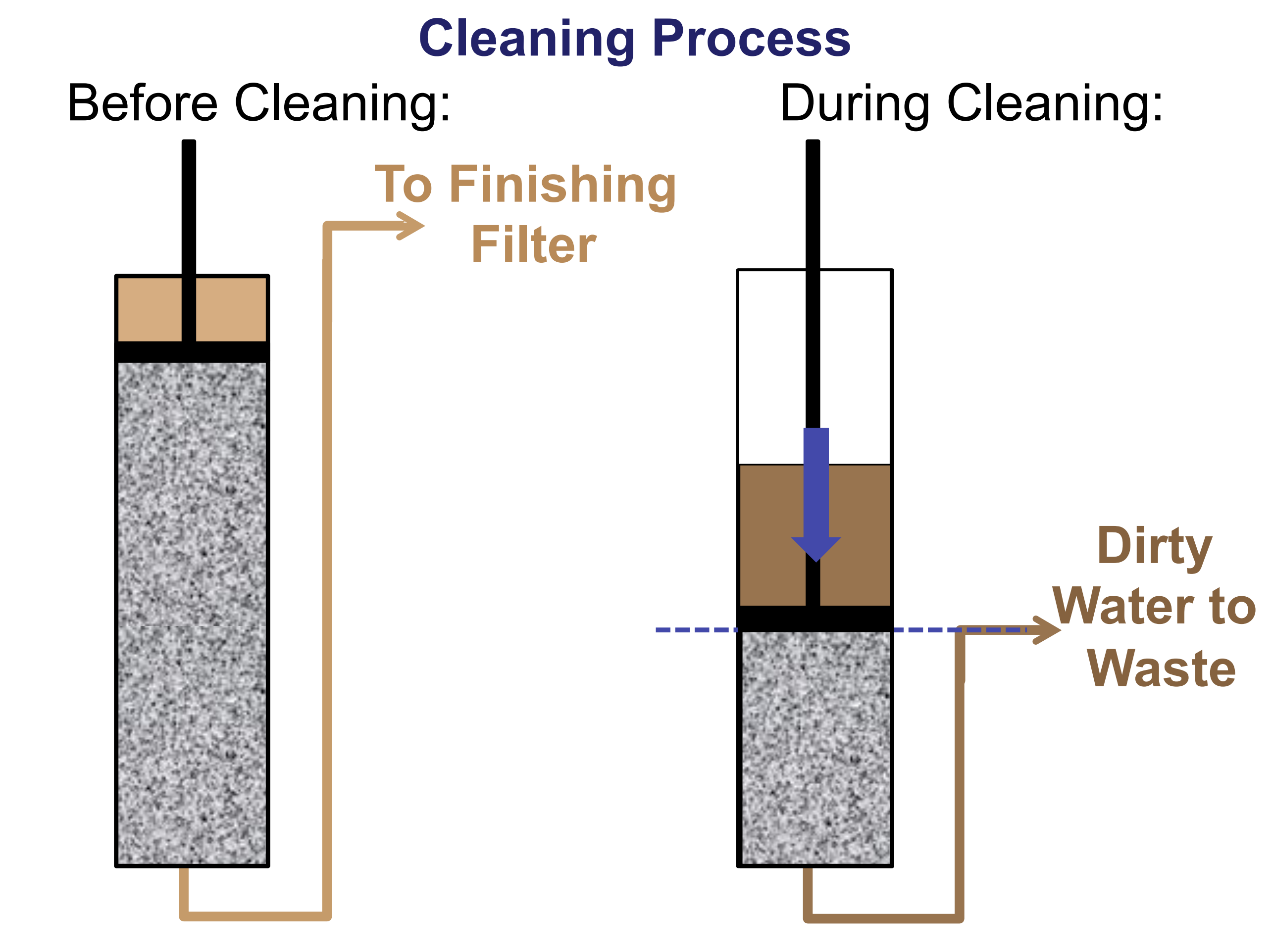
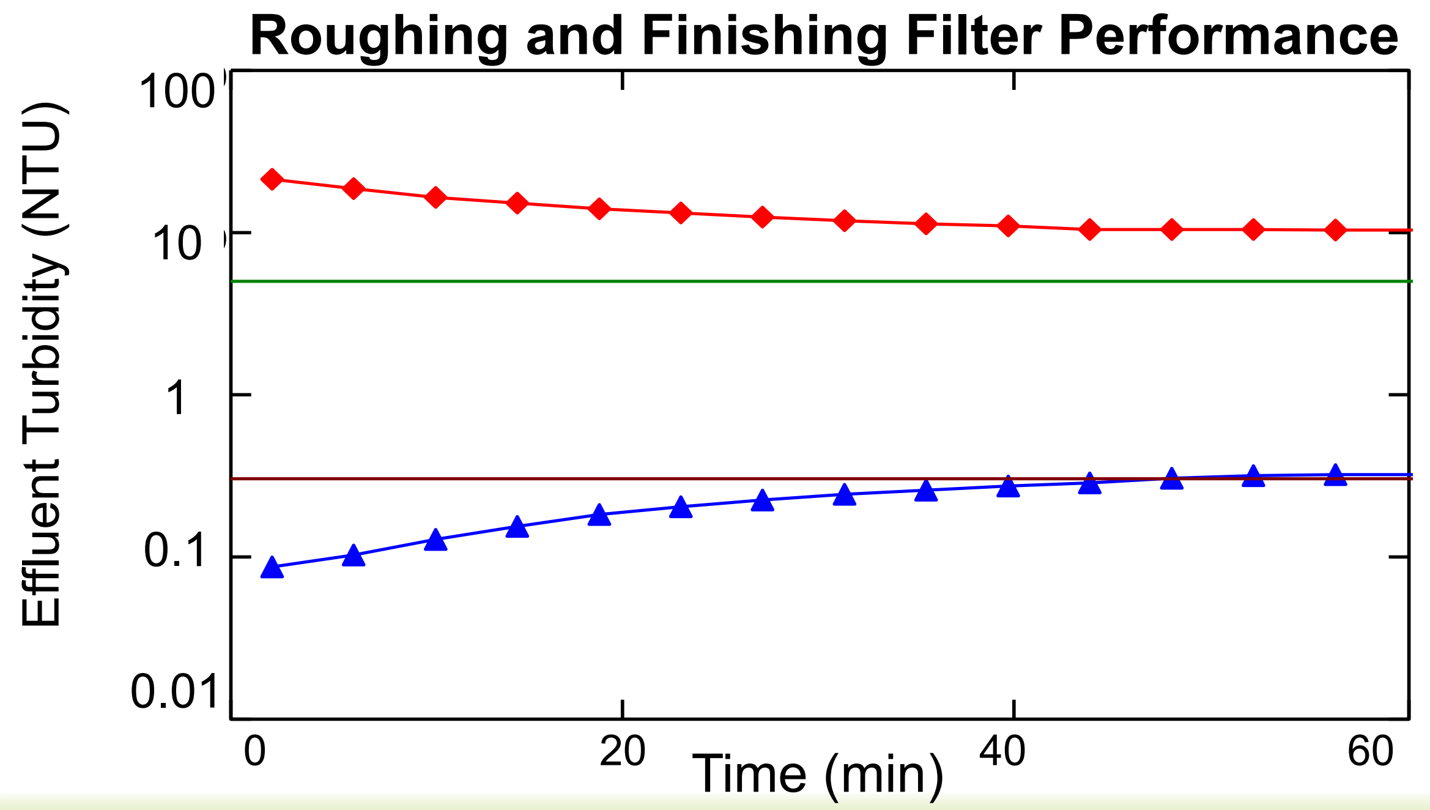


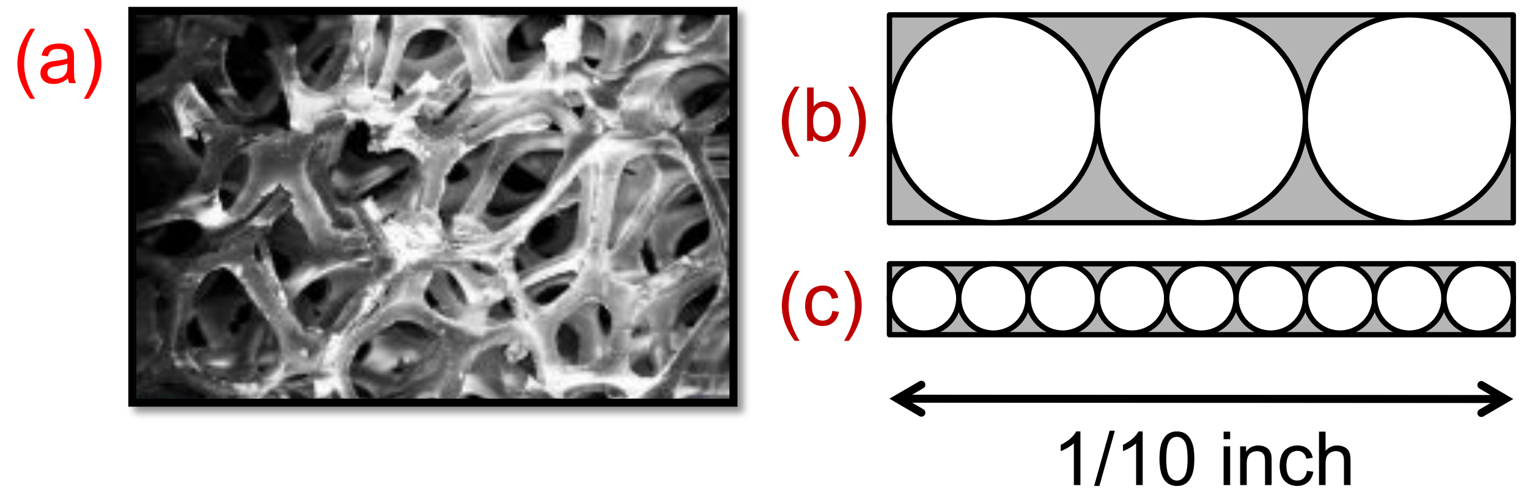


The roughing filter needs to be cleaned around every 4 hours and the finishing filter requires cleaning at most once a day.



Filter performance of both the roughing filter (red) and the finishing filter (blue) for depths smaller than the final prototype's foam depth. Effluent turbidity from the finishing filter meets EPA standards.

Foam as a Filter Medium



30 pores per inch (ppi) (a, b) foam has larger pores than 90 ppi foam (c).

- Foam is **reliable**, **lightweight**, **inexpensive**, and can treat a large volume of turbid (dirty) water before clogging.
- The unit is **easy to use** in the field even without electricity.
- Prototype filter run at 2.5 L/minute can provide 240 people with 15 L/day of clean water.
- The filters are **scalable** to a wide range of flow rates.

Plans for the Future

- Test higher turbidities (greater than 100 NTU).
- Improve compression cleaning procedure.
- Test kiosks and emergency unit in Honduras.
- Learn from partnerships, spread knowledge!
- Provide units to Honduran communities at a low cost.

References

Howard, G. (2003). Domestic water quantity, service level and health. World Health Organization, 1-39.

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