

KlarAqua

Numerous reports by the United Nations and the World Health Organization have indicated a significant worldwide problem with water pollution and accessibility to potable drinking water exists. Due to technological and economical barriers, the problem with water pollution is particularly more serious for under-developed and developing countries. Current water purification systems including sand filters, bio-filters, chlorination units, solar-based systems, and clay-based filters are branded globally as a means to address this problem. However, these systems have presented considerable limitations with their applications including high cost and lack of availability in rural areas. It is KlarAqua's mission to join worldwide efforts to supply those in need of clean potable water at a price they can afford.



A rain tank filled with dirty and contaminated water in the village of San Luis Potosi in Mexico is the only local source of water for the villagers.



Illinois Institute of Technology
Interprofessional Projects Program

<http://ipro.iit.edu>

in collaboration with

Monterrey Tech

<http://www.mty.itesm.mx/principal.html>

**WATER
PURIFICATION**
ONE DROP AT A TIME
www.klaraqua.com

KlarAqua

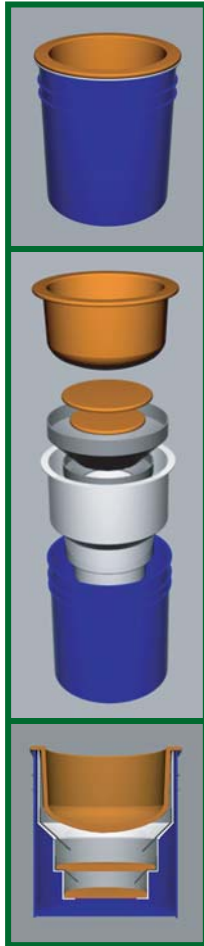
The Catalyst for
Sustainable, Low-Cost
Water Purification Systems
for Developing Countries



One drop
at a time

INNOVATIVE

KlarAqua is a not-for-profit organization whose mission is to promote health, hygiene, and economic prosperity. KlarAqua was developed taking into consideration local water usage issues, cultural factors, and social economics. The system is composed of a 5-gallon bucket, a plastic 3-tiered casing, three sets of clay filters, and two plastic cones to direct water flow. The filters are blended with sawdust to enhance porosity and brushed with colloidal silver to help exterminate bacteria. The three separate layers provide versatility in the treatment of other water contaminants including the removal of nitrates, unpleasant colors and odors, and turbidity.



During a recent pilot study in rural communities of Monterrey in Mexico, engineering and economic feasibility of KlarAqua were evaluated. Results of the pilot study have indicated simplicity of design, potentiality for local material use, and ease of production enables inhabitants to build, commercialize, and use this system locally. The system can be easily modified to extend its reach beyond Mexico to provide other developing regions of the world with purified water.

AFFORDABLE

ESTIMATED UNIT COSTS

| FILTER ELEMENTS | US(\$) | MEX(pesos) |
|--------------------------|---------------|-----------------|
| Ceramic bowl and discs | 1.72 | 19 |
| Colloidal Silver | 1.18 | 13 |
| Plastic casing and cones | 1.90 | 21 |
| 5-gallon bucket | 3.45 | 38 |
| TOTAL | \$8.25 | 91 pesos |

Development of a locally produced and distributed water purification system will greatly reduce the cost removing the economic barrier to accessing potable water. These advantages include:

- 5 gallon paint bucket that can be purchased at any local hardware store
- Potters dig up the clay in their backyards and fire the filters in a kiln using local techniques
- Sawdust and rice husks are waste products that can easily be obtained from saw mills and farms
- Production of the plastic casing and cones by local manufacturers, and their fabrication in bulk, minimize production costs while maintaining a level of quality control



SUSTAINABLE

Involving local artisans in the fabrication process ensures economic expansion without creating a dependency on an external source. The process simultaneously empowers local individuals while generating income. They will be able to produce the clay filter and educate their potential market about the health issues related to water purity. The number of lives positively affected by the system and program will continuously increase because those who have been trained to produce the system can pass their knowledge to others via training of apprentices and peers between villages.



A workshop for potters in the village of Pesquería.

ONE DROP AT A TIME

KlarAqua

Water Purification