



Chlorine Dispensers for Safe Water

Overview

- Two million children die from diarrheal diseases each year. Contaminated drinking water is a leading cause of diarrhea.
- Chlorination inactivates the bacterial pathogens that cause diarrhea. Several studies show that treatment of household drinking water with dilute chlorine solution can reduce child diarrhea by 20-40%.
- Chlorination is a safe and effective water treatment solution that has been used in piped water systems around the world for almost a century.
- In many places where such infrastructure is absent or imperfectly maintained, dilute chlorine solution is marketed as a consumer good used in the home.
- Under a retail distribution model for dilute chlorine solution packaging accounts for the vast majority of product cost. Chlorine itself accounts for just 5% of the total.
- Price is an important barrier to take-up. In many areas, only around 5-10% of people are willing to purchase chlorine solution at prevailing prices.
- Chlorine dispensers at community water sources in rural Kenya have achieved take-up rates of over 60% in a pilot study. This innovative technology uses inexpensive bulk packaged chlorine and makes the process of water treatment very convenient for users.
- Chlorine dispensers could be appropriate for up to 2 billion people globally.
- Scaling up this approach globally could drastically alter the rural water landscape and save the lives of 100,000 – 250,000 children each year.

The Chlorine Dispenser

- Makes chlorine available at the water source to maximize salience and convenience.
- Delivers chlorine at very low cost. Preliminary estimates put the long-run cost of the system, including hardware, at about \$0.15 per person per year. This is between a quarter and a third of the cost of chlorine under the retail model.
- Leverages peer effects to build water treatment habits and increase take up.
- Can be easily refilled and maintained through existing institutions.
- Improves health at an estimated cost of less than \$20 per disability-adjusted life year (DALY) saved. This is extremely cost-effective. One common cost-effectiveness benchmark for health interventions in developing countries is \$100 per DALY.

Chlorine dispensers could be a major new tool for fighting child mortality. By providing families with convenient and cheap access to clean water, chlorine dispensers could save the lives of up to a quarter of a million children each year.

How the Chlorine Dispenser Works

The chlorine dispenser provides dilute chlorine at communal water sources. The durable plastic tank and dosing valve are enclosed in a lockable stand that is cemented into the ground next to the water source. Users turn the valve to release a metered dose of chlorine into the water they collect at the source. Transportation back to their homes provides contact time and agitation for chlorination prior to consumption. A community meeting is held at the time of installation to inform households about the dispenser and discuss safe and proper usage. Instructions for use are also displayed on the dispenser. Maintenance and refilling can be coordinated through schools, water sellers, local government, or community organizations.



Dispensers in the Community

Dispensers have been provided to 5,000 people at 20 rural water points. During an unannounced visit three to six months after installation, 61% of households in communities with a dispenser had detectable chlorine in their drinking water compared to 8% of households in a comparison group, and the percentage of households who use the dispensers was rising over time.

A second round of pilots is underway, with dispensers at a variety of settings, including schools, unprotected springs, and several urban sites. Work is underway to refine the dispenser hardware to further lower costs and develop strategies for marketing, cost recovery, and sustainable scale-up.

Innovations for Poverty Action

Innovations for Poverty Action (IPA) is a nonprofit organization that creates and evaluates approaches to solving development problems, and disseminates information about what works and what does not to policymakers, practitioners, investors, and donors around the world. IPA is working in collaboration with researchers from U.S and Kenyan universities to roll-out and evaluate dispensers at scale.

Contact Information

dispensers@poverty-action.org

Phone:

U.S.
617 495 9145

Nairobi, Kenya
254 (0) 724 256781

Busia, Kenya
254 (0) 728 842 641