At least 2.5 billion do not have access to adequate sanitation\(^1\)

Diseases such as *Giardia, Hepatitis, Polio, Norovirus,* and *Cholera,* kill tens of thousands in areas without adequate sanitation\(^2\)

Tablet Chlorine is a safe and effective method for controlling pathogens in a water system

Water Systems in Ecuador lack appropriate chlorination

Many water systems do not have capabilities for chlorination, or do not use the systems correctly

There were three primary goals for the research:

- Determine whether Trichlor and Calcium Hypochlorite tablets are effective in providing the right amount of chlorine when used with a Flow-Over Feeder
- Determine the feasibility of using Flow-Over Chlorinators in rural communities without adequate sanitation
- Establish a set of best practices and recommended setups for the use of Flow Over Feeders in rural communities

- Two different chlorinators (shown below) were used for testing: an In-Line Pool Chlorinator, and a portable water chlorinator provided by Water Mission International
- Each Chlorinator was tested at several water flow rates ranging from 0.25 L/s to 2 L/s
- At each flow rate, the feed rate of chlorine was adjusted to 0% (minimum), 50%, and 100% (maximum)
- Every 30 minutes, the chlorine level was found with a Colorimeter
- Different parameters were varied to try to find the optimal configuration

A time weighted average and a standard deviation was calculated for each set of data points

Standard Deviation showed how consistent the results were

The best configuration was the Water Mission Chlorinator with the Trichlor tablets

The hardness of these tablets, coupled with their higher chlorine content, yielded a much steadier flow of chlorine

The ideal setup for chlorination at flow rates lower than 1.5 L/s is the Water Mission Chlorinator operating with Trichlor tablets

This setup is more expensive by about 25%

Trichlor tablets are harder to purchase

At flow rates higher than 1.5 L/s the IPC is moderately effective at dosing chlorine, but still produces significant variability in the flow

A storage tank may be able to control this variability


\(^2\) Center For Disease Control and Prevention. (n.d.). *Waterborne Illnesses.*