# Developing an Automatic Chlorine Concentration Sensor For Use in Developing Nations

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## Problem

**Global Problem**

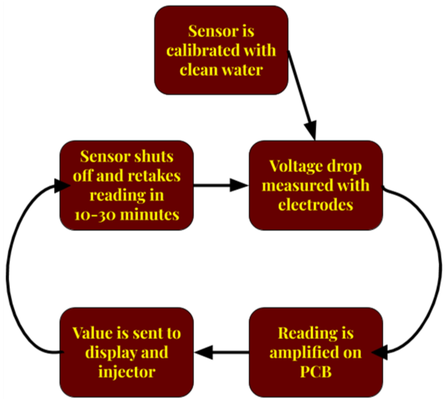
- 1.7 Billion cases of diarrheal disease caused by contaminated drinking water(3).
- 785 million people do not have access to clean drinking water(4).
- Contaminated drinking water is directly linked to 3.4 million deaths per year(5).

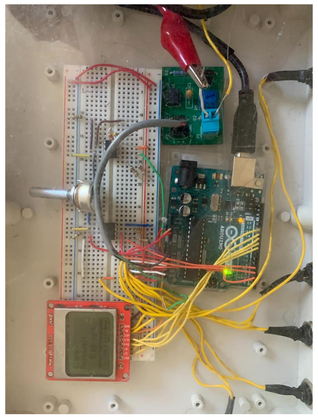
**Local Problem**

- Chlorine tests are imprecise and hard to read.
  - Leads to more infections.
- Multiple daily tests take extensive time.
- Require accuracy to 0.2 mg/L to ensure effectiveness(1).

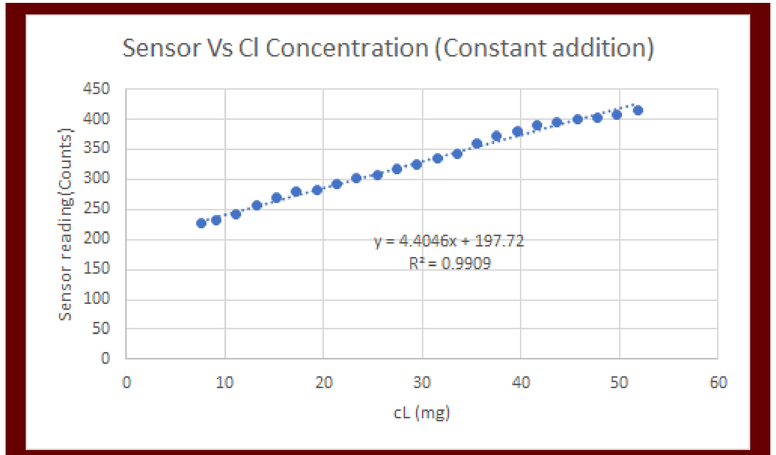
## Methods

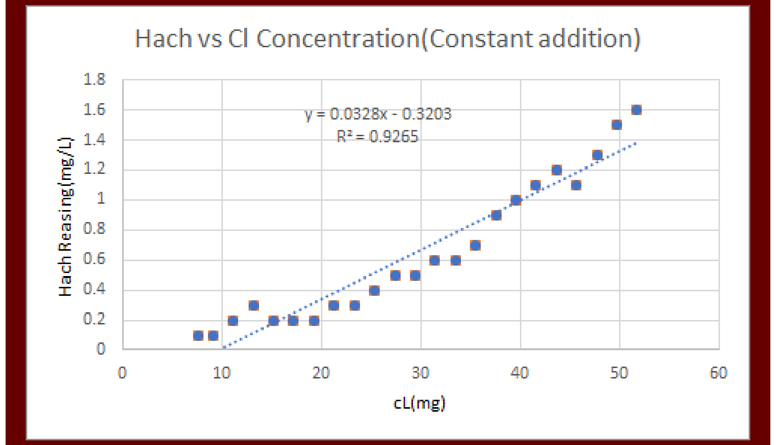
Platinum and stainless steel electrodes are used to measure the voltage drop across water. (2) This is then converted to chlorine level in mg/L or PPM, sent to the chlorine injection system and reread depending on the injection variables,



## SOLUTION




These figures compare the chlorine sensor developed and a market competitor. The chlorine sensor is more precise to a smaller interval and more accurate than the market competitor.

## Conclusions

- This chlorine sensor is able to accurately and autonomously detect trace amounts of chlorine in flowing water.
- The chlorine sensor is unaffected by temperature fluxuations that will be seen in country.

## Future Work

- Confirming past findings with different method for finding a calibration curve.
- Incorporating the sensor readings into the chlorine injection system.
- Remake housing for smaller PCB.

## References

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