

Technology

The AguaClara Difference

Despite functioning on the same basic process, there are major differences in design between what is effective in the developed world and what is feasible in the Global South. Almost all of the plants in the developed world rely on large amounts of electricity to monitor and operate. However, in the developing world, access to a reliable source of electricity is both doubtful and prohibitively expensive. AguaClara plants use gravity instead of pumps, and mechanical devices instead of electrical monitors, to run the plant. Since the plants are designed to be constructed using almost exclusively locally-available materials and labor, AguaClara communities also avoid the risks of failure or shut-down that plague other projects dependent upon overseas expertise and supplies. Up-to-date plant designs are freely available and customizable using the [open-source AguaClara Automated Design Tool](#), [accessible via our online interface](#).

Background: The Purpose of Water Treatment

In 1854, English physician [John Snow](#) halted a deadly outbreak of cholera by simply removing the handle from the water pump of the affected London neighborhood. In doing so, he proved that cholera, like many other diseases, is easily transmitted through water sources contaminated with what we now know to be microscopic organisms (bacteria and viruses). Denying the people of Broad Street access to the contaminated water was an effective way for Snow to stop the spread of *Vibrio cholerae*, but such drastic measures are usually not necessary today. Instead, water can be treated to remove the suspended bacteria before it is passed along to the general population. Though there are many different ways to build a water treatment plant, most rely on the same general process:

The Water Treatment Process

- a. Combine all of the suspended particles (including clay, dirt, and organisms such as bacteria) into larger bunches of particles. This process is called *flocculation* and uses a coagulant to bond the dissolved particles into *flocs*.
- b. Allow the heavier, flocculated particles to settle out of the mixture. This process typically takes place in a sedimentation tank designed to maximize the range of particle speeds & sizes it can capture.
- c. Filter the water to remove any of the lighter flocs that escaped sedimentation.
- d. Dose the water with chlorine to kill any remaining disease-spreading organisms.

Performance Data

1. [Wash4All Data](#)
2. [POST App Data](#)

Related Pages

[AguaClara Technology](#)

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[Why Open Source?](#)

Program Director Monroe Weber-Shirk's Lecture Slides for Intro to Water Treatment: [Water Treatment.pptx](#)

Research methodology and current areas of focus: [Research](#)