

## Need:

To reduce the spread of disease in Sub-Saharan Africa



## Approach:

Educate the people on importance of clean hands

- E** • Explain why waterless solutions work
- S** • Show proper way to use sanitizer
- T** • Teach how to make using natural resources
- B** • Begin production process

## Ingredients:

**Aloe** – Currently grown in Africa

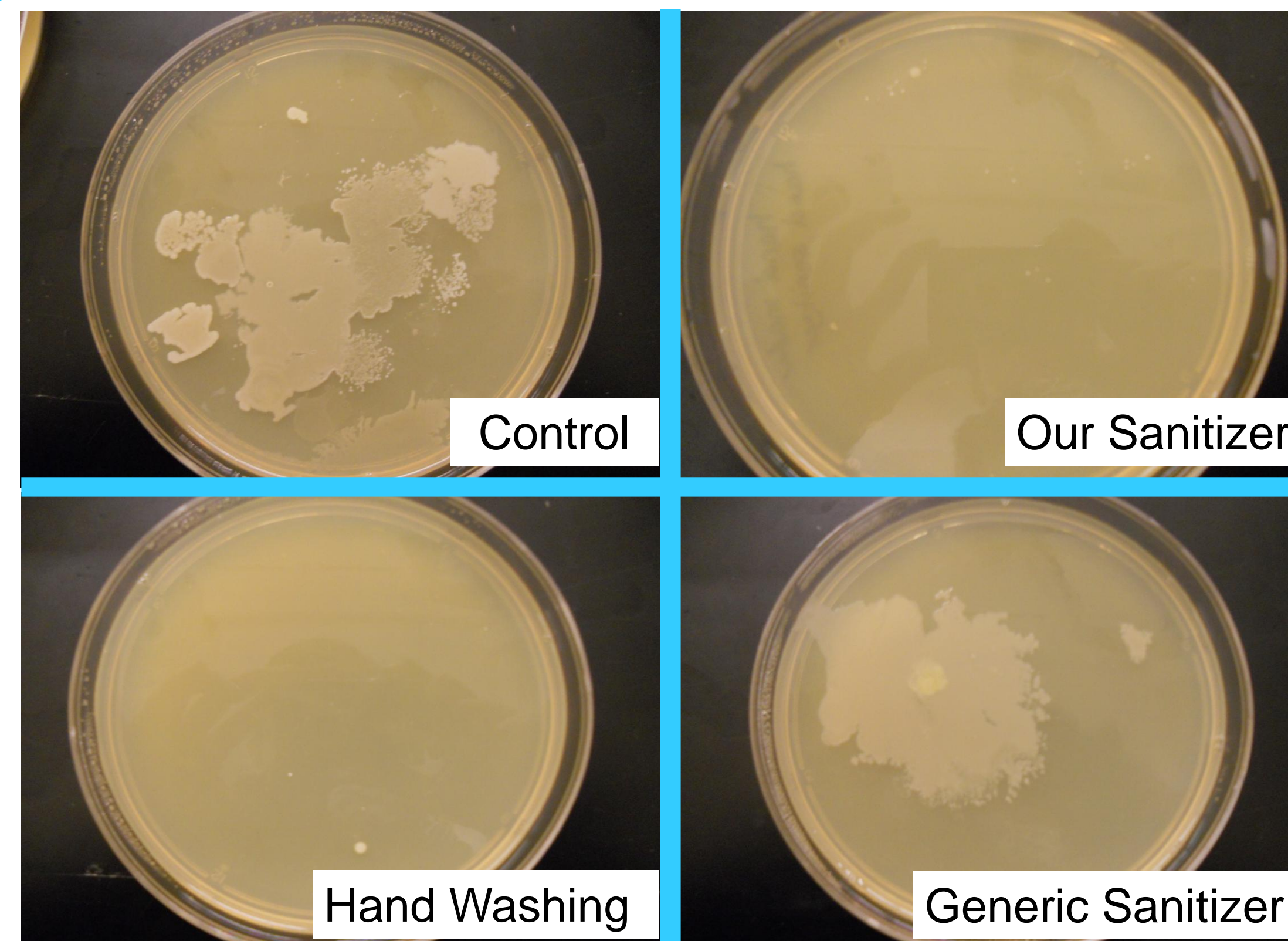
**Essential Oil (Myrrh Oil)** – can be produced using basic distillation methods with myrrh, which grows in Africa

**Alcohol** – Initially imported, eventually distilleries can be set up to produce ethyl alcohol, from corn (grown in Africa)

## What's Wrong with Soap?

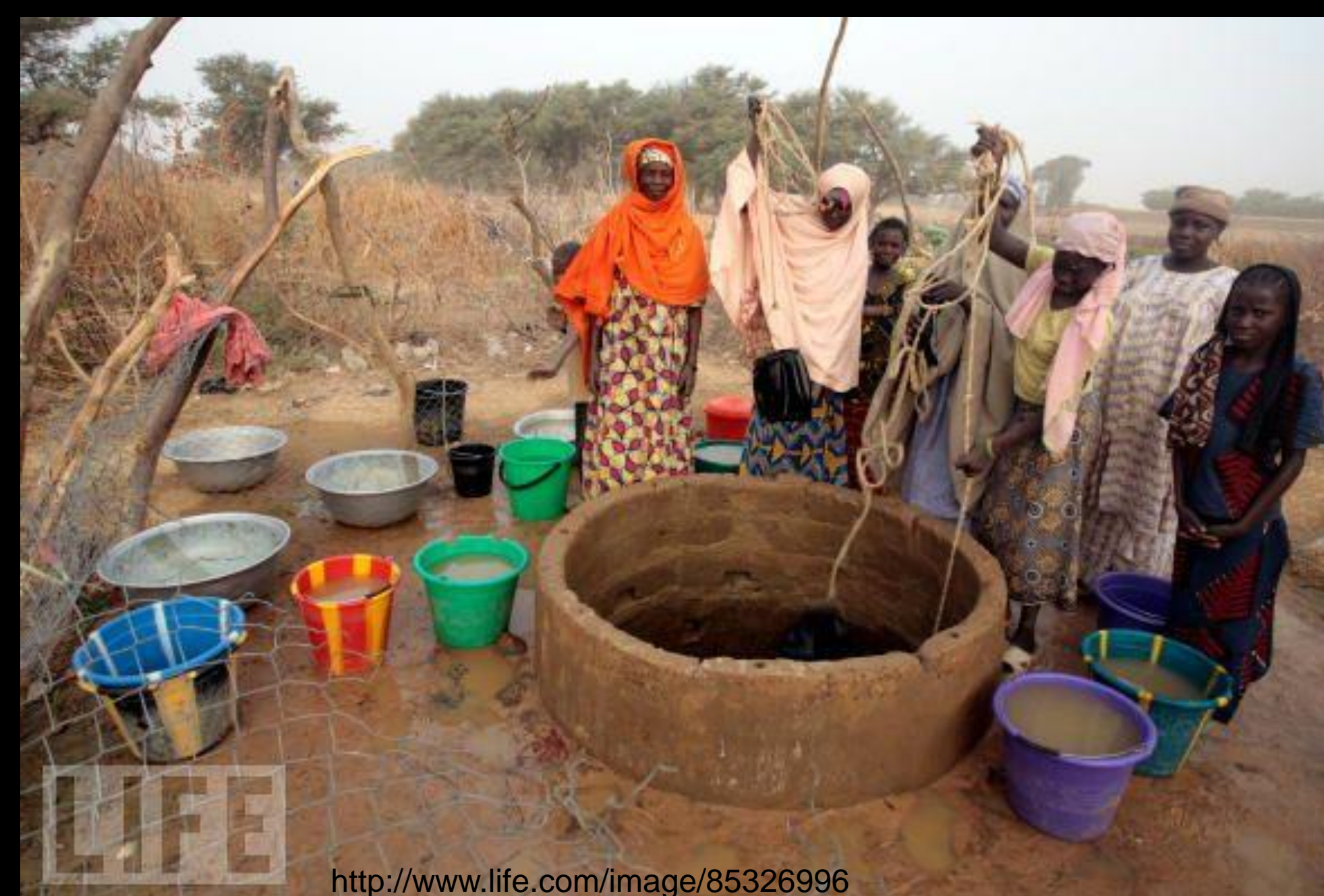
Most water in Sub-Saharan Africa is dirty. Clean water is rare and needs to be used sparingly

**Benefits to Hand sanitizer:**  
**Quick, Convenient, Highly Effective**



## Procedure:

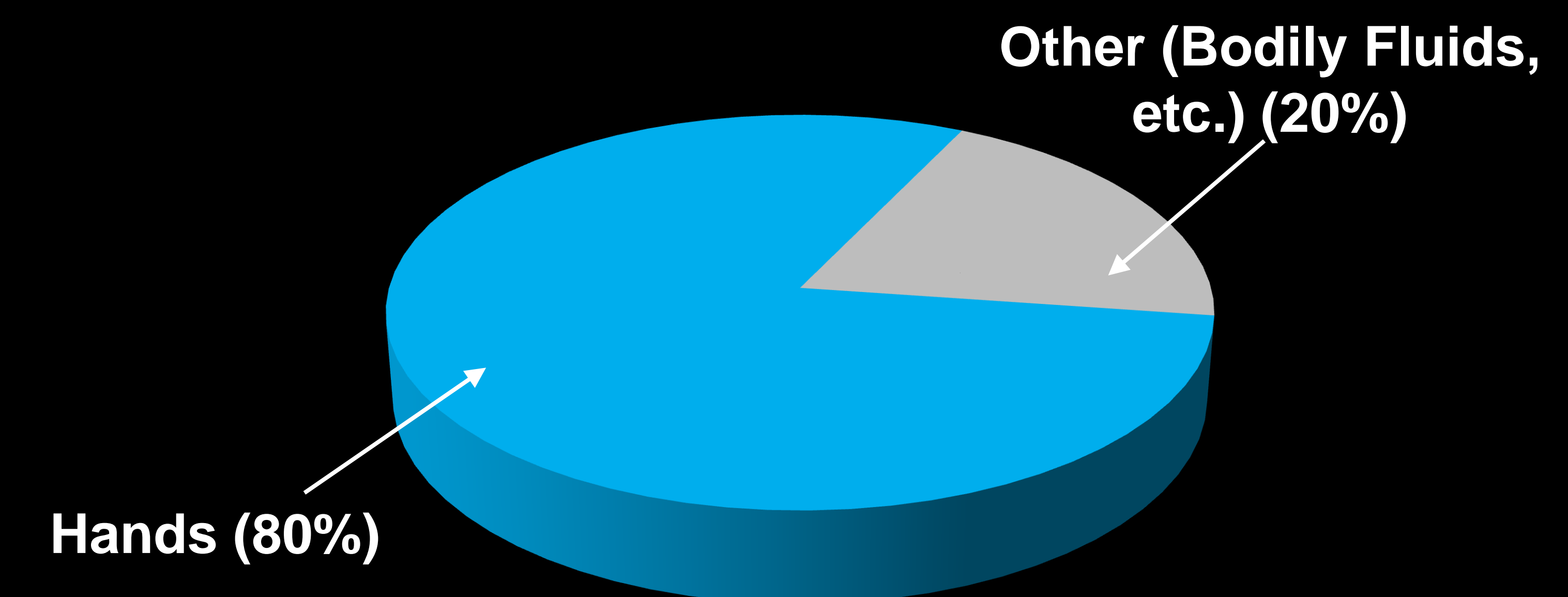
- Set up lab with necessary equipment
- Touch dirty surfaces and record what was touched by hands
- One hand touches a plate directly after touching the dirty surfaces
- One hand uses homemade sanitizer then touches a plate
- One hand uses soap and water then touches a plate
- One hand uses generic hand sanitizer then touches a plate
- Plates are put in an incubator for 24 hours
- Photos are taken and results are recorded



## Why Sub-Saharan Africa?

- **43%** of children do not have safe, accessible drinking water
- **64%** of children do not have adequate sanitation
- **60%** of the population lacks access to basic sanitation

## How common infections are spread



## Impact on Sub-Saharan Africa:

**Goal:** Develop a sustainable system in which all ingredients can be produced in the given country.

The final product can be sold in the region, creating profit. Our end product will benefit African countries economically and by reducing disease spread.

## References:

- Luby, S.P. (2010). "A community-randomized controlled trial promoting waterless hand sanitizer and handwashing with soap, Dhaka, Bangladesh". *Tropical medicine & international health* (1360-2276).
- "Fecal-Oral Transmission. DrGreene.com." *DrGreene.com Pediatrics. Naturally*. 2010. Web. 25 Nov. 2010. <<http://www.drgreene.com/azguide/fecal-oral-transmission/>>.
- "Kenya: World Bank to Launch Handwashing with Soap Campaign." *WASH News Africa*, 02 May 2008. Web. 11 Nov. 17. <<http://washfrica.wordpress.com/2008/05/02/kenya-world-bank-to-launch-handwashing-with-soap-campaign/>>.
- Way, By The. "Making Homemade Hand Sanitizer | No Ordinary Homestead." *No Ordinary Homestead | It's about Freedom*. Web. 07 Dec. 2010. <<http://www.noordinaryhomestead.com/dailiness/making-homeade-hand-sanitizer/>>.
- "Sanitation Situation Serious in Sub-Saharan Africa." *Gallup.Com - Daily News, Polls, Public Opinion on Government, Politics, Economics, Management*. Web. 07 Dec. 2010. <<http://www.gallup.com/poll/105541/sanitation-situation-serious-sub-saharan-africa.aspx>>.