

D-Lab Development

2009.10.16

Water Quality Testing

You can't see bacteria

Make it visible, in a way you can acknowledge its presence,
or count how many are there

Give it a food, metabolizes and turns certain color

Different waste products
produce different colors

Don't want to set off every bacteria

Grow them at 98.7 (human temp)

Food. Environment. Temp

Method 1

Choliform turns yellow

Method 2

Sulfur reducing bacteria, will turn black (rotten eggs)

Test tubes aren't reusable

Wasteful

Expensive for resource strapped community

To reuse, have to sterilize tube

Presence absence test

YES or No are they there?

Quantify

2 Methods

Petri Film

Measure 1ml of water

Place on dried gelatin

Red and blue colonies

Red = choliforms

blue = fecal choliforms

You will be able to count them

Problem, small sample size

Normally quantified

by 1 per 1000 parts (?)

Method 2

Take larger water sample

Pull sample through filter paper

All bacteria in sample are
deposited on paper

Save filter paper, place on petri dish,

grow to see what is there

Then you can count how many bacteria

It is all about growing and changing color

Method 2 device costs a lot of money, \$850 - \$1000

So D-Lab made a cheap device,

with a baby bottle

Sterile inserts adapted to baby bottle,

for about \$20

D-Lab, what we think is how we can make
everything cheaper

Easy to replace parts

Incubate them at warm temp.

Field incubators cost \$1200 and need electricity

Most places don't have electricity

Have to do test in 6hrs of timing

D-Lab wanted to make a Kit that could be tested in field

Phase Incubator, based on phase change material to maintain temp of 37 for 24hrs

Recent news from Peru that the phase change incubator is comparable to an electric incubator, go Amy's invention

Have students do a bunch of water quality testing

Important, to test bacteria in water, not on hands or in mouth

Simple sterilization techniques

Alcohol + flame

The only thing you will use to touch things that come in

contact with water, forceps

"Edward Forceps Hands"

Sterilization order

Ring, Filter Paper, Mesh,

Running blanks to make sure that your test are not contaminated

once every 20 tests maybe

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EC.701J / 11.025J / 11.472J2 D-Lab I: Development
Fall 2009

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