CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

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Project Number

34475

Project Title

Bacteria Beneath the Beach: A Study of E. coli and Coliforms in Sand from Parks and Beaches in Los Angeles County

Abstract

Objectives/Goals

Objective: The experiment was to measure the presence or absence of Escherichia coli (E.coli) in different samples of sand collected from different locations. It was expected that there would be more E.coli at beaches than at parks because of storm runoff and other pollutants settling into the beach.

Methods/Materials

Materials and Methods: Sand samples from 3 parks (Garfield Park, Orange Grove Park, Alhambra Park) and 2 beaches (Santa Monica Beach, Mother's Beach in Marina Del Rey) in LA County were collected. Samples of sand were each scaled to a half-cup, where the sand was mixed in with 2 cups of water in a Ziploc bag. After a vigorous hand mixing for 2-3 minutes, the water was poured out and filtered to get out any impurities. After filtering, the water was either poured into a test kit that measured presence/absence of E.coli or a lab kit that was sent back to the lab to quantify how much E.coli was in the beaker. Results from the lab were received 3 days after the samples were shipped out.

Results

Results: All 5 locations sampled tested positive for E.coli. The beaches had a lower E.coli count than the parks, but they were all unsanitary. All samples from the parks showed an incredibly high coliform count. The parks had a maximum of 1840 organisms of E.coli/100 mL of water when the standard was only 126 organisms/100 mL.

Conclusions/Discussion

Conclusions: The conclusion is that since the parks have nowhere for their runoff to go, they accumulate a higher E.coli count than beaches and other place higher E.coli count than an identical material amount that has an interaction with water or another substance that bacteria could transfer into. For public health, it is suggested that any person who goes to a beach or park uses hand sanitizer or soap and water to kill off harmful bacteria. Also, turning the sand over with backhoes so that the bacteria cannot saturate a space on the beach is also a probable solution.

s that do have a place for pollution and waste to go. When a space is enclosed, it has a

Summary Statement

My project was to determine the amount of fecal coliforms and E.coli present in beach and park sand at various locations throughout Los Angeles County.

Help Received

Mother drove me to locations. Sent samples to Schneider Global Laboratories to get data quantified.

Preliminary