Characterizing Microbial Pollution from Southern California Beaches

Christian Rodriguez (chrisrodriguez40@yahoo.com), Christine Lee, Jennifer Jay
Department of Civil and Environmental Engineering, UCLA; www.cee.ucla.edu/

Introduction: Understanding why and how beach water & sediment are polluted.

Problem Description: People get sick swimming in water that is polluted.

Proposed Solution: Using knowledge of beach environment to understand pollution.

How does sediment influence bacteria survival?
- Bacteria lives in the sediment.
- Bacteria multiplies in the sediment.
- Sediment can help E.coli grow and can release E.coli back into beach water.

People that swim in polluted have a higher risk of getting illnesses such as stomach flu, ear infection, upper respiration infection and skin rashes than swimmers at clean beaches.

Cleaning storm drains before getting to the beaches and polluting them.

Characterizing survival of microbes in the environment will help public officials protect recreational water quality.

Measured several parameters:
- Bacteria concentration
- Membrane Filtration, IDEXX
- Moisture content
  \( \frac{\text{Dry weight} - \text{Boat}}{\text{Wet weight} - \text{Boat}} \)
- Organic content procedure
  \( \frac{\text{Weight} + \text{OC} - \text{Boat}}{\text{Weight} - \text{OC} - \text{Boat}} \)
- DNA extraction
- Salinity test
- Sediment grain size analysis

Acknowledgments: We are grateful for the opportunity to be part of Summer@CENS. Special thanks to Wes Uehara & Karen Kim.