CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Ean Z. Staedler

Project Number
J0999

Project Title
What Do You "Lichen" Your Air? Biomonitoring using Lichens as Bioindicators

Abstract

Objectives/Goals
Using lichens as bioindicators for biomonitoring, my project objective is to determine whether the air quality in my home town Aptos is cleaner where the point source air pollution is the freeway than the air quality in Moss Landing where the pollution source is a natural gas-fired power plant and a freeway.

Methods/Materials
Two one foot square quadrats were made using PVC pipe and monofilament line. These were used to determine percent coverage of lichen growth and type of lichen seen. Six 4# X 5# acrylic squares covered with petroleum jelly were made and hung in areas of lichen observations to capture particulates. A GPS was used to record locations of five tree sites and one graveyard site in Aptos and four tree sites and one gravesite in Moss Landing. Locations were plotted using Arc View#. Three types of lichens, crusty, leafy and feathery and their amounts of coverage were compared between the two towns.

Results
Areas closest to the pollution sources (<200 meters) of the freeway and the power plant had little to no lichens. Moving further away from the pollution sources percent coverage of lichens and different types increased.

Conclusions/Discussion
Based on the type of lichen growth and percent coverage that I found, Aptos and Moss Landing appear to have similar air quality environments.

Summary Statement
Biomonitoring using lichens as bioindicators.

Help Received
Dad helped with power tools; Mom helped type and drove me to sites; Dr. Tinker helped with Arc View