CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)

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Project Number

22138

Project Title

Estimating Future NO(2) Concentrations at Mt. Miguel High School

Abstract

Objectives/Goals

NO(2) is one of the common components of automobile exhaust. If individuals are regularly exposed to a high concentration of NO(2), it can potentially be hazardous to their health. Future students of Mx Miguel High School will soon be attending school immediately adjacent to a freeway where NO(2) concentrations may significantly increase. The purpose of this project was to estimate future concentrations of NO(2) at Mt. Miguel High School.

Methods/Materials

This was done by preparing passive diffusion samplers and placing them at freeway locations at distances| from the freeway similar to MMHS and the new freeway under construction. The tubes of the samplers are small#71mm (length) by 11mm(diameter)-with two stainless steel meshes in one cap at the closed end, coated with TEA-a chemical compound that absorbs NO(2) during the exposure period. After a three-dax exposure period, the samplers were treated for color development with two analysis solutions andt analyzed with a spectrophotometer at 540nm. Nitrite standards were used to create a standard curve.

Results

Results showed that Freeway #1 sampler concentrations and current school sampler (control concentrations were similar. Freeway #2, Freeway #3, and Freeway #4 sampler concentrations weret significantly higher than school sampler concentrations.

Conclusions/Discussion

These concentrations were just below the World Health Organization's issued guidelines for humant exposure to NO(2) (1987). Therefore, there is reason to believe nitrogen dioxide concentrations should | carefully monitored after freeway construction is complete.

Summary Statement

The purpose of this project was to estimate future concentrations of NO(2) at Mt. Miguel High School by preparing passive diffusion samplers, placing and then exposing them at freeway locations, and analyzing them with a spectrophotometer.

Help Received