CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
J1710

Project Title
Tubifex Effects: Are Gasoline and Ethanol Harmful to Aquatic Life, and Is Their Toxicity Increased when Combined?

Abstract

Objectives/Goals
This study determined if adding ethanol to gasoline increased its toxicity to Tubifex worms, when compared to either ethanol or gasoline alone.

Methods/Materials
Five dilutions of ethanol (vodka), gasoline, and gasoline + ethanol were prepared with spring water and poured into petri dishes. Ten worms (Tubifex tubifex) were transferred to each treatment and their activity level, clumping behavior, and bleeding were observed after 0, 3, 6, and 10 minutes. Recovery in spring water was observed after 3, 6, and 10 minutes and 24 hours.

Results
Ethanol reduced worm activity the most, while gasoline and gasoline + ethanol equally reduced movement. Ethanol was the only treatment that caused the worms to not fully recover, causing mortality at the high dose.

Conclusions/Discussion
Based on the concentrations tested in this experiment, adding ethanol to gasoline did not increase the mixture's toxicity. Overall, the results of this experiment indicate that the average amount of ethanol added to gasoline today will not increase acute impacts to aquatic life, as represented by Tubifex worms.

Summary Statement
My project tests if adding ethanol to gasoline increases its toxicity to aquatic life.

Help Received
Mother and teacher helped aquire materials. (vodka, gasoline, pipettes, beakers, and graduated cylinders.)