CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
Erich W. Strub, II

Project Number
J1536

Project Title
Can Fire Survive in a Microgravity Environment?

Abstract

Objectives/Goals
The purpose of my experiment is to answer one question. Can fire survive in a micro-gravity environment?

Methods/Materials
By spinning a fire in the center of a sealed drum, centrifugal force will pull the most dense particles away from the fire. This will change the direction of buoyancy keeping the heated oxygen depleted gases around fire, thereby extinguishing the fire.

Results
After running several failed tests, I determined the test was not faulty but the conditions. I changed the RPM and pre-run time, and ran more tests. With the proper speed and pre-run the fire self extinguished as I expected, and also left a smoke cylinder in the center of the drum.

Conclusions/Discussion
After igniting the wick electronically, the oxygen depleted gases stayed toward the center of the drum completely surrounding the fire and choking it to death, thus proving my theory to be correct. Fire does need gravity in order to sustain its life. The reason for this, is that with gravity, the oxygen depleted gases are pushed away from the fire, bringing new oxygen rich air to the fire, thus leaving the fire to burn.

Based on the results of my experiments, my hypothesis is deemed correct. Can fire survive in a micro-gravity environment? No, it needs gravity.

Summary Statement
My project was to show the relevancy of gravity to fire.

Help Received
Mother helped type, Father helped build machine, Fire Chief William Kevin Clark supervised demonstrations