CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
J1126

Project Title
Global Air Scrubber (GAS)

Abstract

Objectives/Goals
I wanted to create an inexpensive air filtration system that cleaned particles from smog-filled air.

Methods/Materials
Peat moss, ductwork, powdered titanium dioxide, fan, cardboard box, trash bags, household air filters, window screen, glue, duct tape, and cotton pads

I built a device that funneled dirty air from an industrial coal fueled fire through the filters I created. The filters were a titanium dioxide covered screen, peat moss covered screen, and a household air filter.

Results
After verifying the design of the Global Air Scrubber (GAS), I used high-quality white cotton pads to determine the number of physical particles in the air. When using the GAS without the filter, basically pure dirty air, I recorded an average of 27 out of 30 dirty cotton pads (90%). When the GAS device was tested with the full filter ensemble the number of cotton pads with physical particles was drastically reduced to 1.4 out of 30 cotton pads (4.7%). A clear trend is the filters are removing physical particles from the air and returning clean air to the environment. The filter ensemble does work.

Conclusions/Discussion
This project was important for two reasons. First, there is a demand for commercial air filters to help the environment. Next, it brought awareness to a problem that needs more solutions. All over the world tests are being conducted to find the best and least expensive air cleaning solution. This project was inline with this research and helped me learn that there are many different items that can be used to clean the air. The first filter I used was covered in peat moss. As I added filters of different substances to my device, the amount of solid particles decreased. Proposed next trials would include filter shape redesign as well as additional filter materials.

Summary Statement
My project is about learning how to create an inexpensive and efficient air filter.

Help Received
I had little help. I engineered the device and built it myself. The only help I had was building and maintaining the fires.