



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Travis J. Henderson	Project Number J1118
Project Title Air Filtration HEPA Filter: Is It Worth It?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The Environmental Protection Agency has listed indoor air pollution as a major concern in the United States. They have determined that on average people spend 90% of their time indoors, so air quality indoors is much more important than that of outdoors. With that information in mind, this study was conducted to test four filter types of commercially available home air filters to see which would do the best job at removing particles from the air.</p> <p>Methods/Materials The filter types that were chosen for the experiments were: Economy, Washable, Natural Aire Pleated, and Filtrete Micro Allergen. Filters were cut to a dimension of 80mm by 80mm so that they would fit in a specially designed filter test box. The particulates chosen for the experiment were: Carpet dust, Sawdust, Volcanic Ash, and Burned Wood Ash. A 1.25ml quantity of each particulate were blown through the test box without a filter in place to set a control. The particulates were captured on prepared slides that were placed at the end of the test box. After controls were established, a filter was placed into the test box and the experiment was repeated. There were 5 trials with each filter and each particulate for a total of 80 trials. All slides were digitally photographed through a microscope with a power of 450x and compared to each other.</p> <p>Results Slides were compared by particulate, and were grouped by filter type. It was determined that a lower amount of particulate matter captured on the slides would indicate better filtration. The Economy and Washable filters showed no significant difference when compared to the controls. The Natural Aire Pleated slides had significantly less particulates than the control. Finally, the Filtrete Micro Allergen slides represented the lowest amount of particulates by far.</p> <p>Conclusions/Discussion Based on the results of the data that was gathered, the Filtrete Micro Allergen filter removed the most particulates from the air. This would mean that my hypothesis was correct; the Filtrete filter was the best. It is evident that HEPA filters, like the Filtrete Micro Allergen, should be used to reduce indoor air pollution and increase the quality of life for everyone, especially allergy and asthma sufferers.</p>	
Summary Statement The purpose of this project was to compare the efficiency of commercially available home air filters in order to determine the best filter to use for reducing indoor air pollution.	
Help Received My father took pictures of the process and my mother allowed me to use the equipment in her high school science lab.	