CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

35397

Project Title

Indoor Home Air Quality Is Affected More by Which Wax: Beeswax, Paraffin Wax, or Soy Wax?

Abstract

Objectives/Goals

My project was to determine whether indoor home air quality is affected more by the burning of a Beeswax, Paraffin Wax, or Soy Wax votive candle. I believed that home air quality would be affected more by the amount of soot produced by a Paraffin Wax votive candle because it is a petroleum based wax.

Methods/Materials

Ninety votive candles were made with exactly 65 grams of wax each. Thirty votive candles were of Beeswax, thirty of Paraffin Wax, and thirty of Soy Wax. Ten candles at a time were timed in the testing station. The testing station collected the soot on glass petri dishes from the burning candles. After the candles burn for a total of six hours, the glass petri dishes were moved to the measuring station. The measuring station measured to amount of light passing through the sooted petri dish. The light was measured with a light meter (Lux) and noted in the logbook. Observations of soot, smell and cleanliness were also noted.

Results

Beeswax average soot deposition was 99.4 Lux. Paraffin Wax average soot deposition was 94.3 Lux. Soy Wax average soot deposition was 95.4 Lux. The lower to Lux reading the higher the soot deposition.

Conclusions/Discussion

My conclusion is the Paraffin Wax being a petroleum based wax produced the most soot affecting indoor home air quality. I also observed that Soy Wax cleaned up easier and Beeswax burned the cleanest. This information is useful in decision making when buying candle products for your home. In fact, soot deposition from certain candles can be significant and may cause indoor levels of airborne soot to to exceed concentrations allowed in outside air by the Environmental Protection Agency of the Federal Government.

Summary Statement

Indoor home air quality is affected more by beeswax, paraffin wax or soy wax as an indoor candle?

Help Received

Father helped with assembling project board.