



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Mia Placencia	Project Number S0920
Project Title A Study of Particulates Emitted from Printers	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective was to test if office and home printers released particulate matter during printing and assess if the level of particulates was unhealthy.</p> <p>Methods Identified the printer model, switched printer paper to Hammermill Printer Paper, downloaded document to print from a USB Flash Drive, recorded particulate levels using Dylos DC1700 Air Quality Monitor for one minute before printing(control), 20 seconds during printing, one minute after printing, and entered data to Microsoft Excel.</p> <p>Results 52 printers were tested and examined. A chi square test was used and produced a confidence level of over 99.99% for both large and small particles. The printers all gave out substantial amounts of particulates and the change in air quality was due to the printers.</p> <p>Conclusions Each printer was recorded and analyzed. The chi square tests suggest that printers caused a change in the air quality. The data suggest that the year of the printer was of no relevance. The most emitting model types for both large and small particulates were HP LaserJet 600 M602 and HP Color Laser Jet 3600n. Printers can release unhealthy levels of particulates and the information could be used for awareness, manufacturing processes, and regulations.</p>	
Summary Statement I measured particulates that printers emitted during printing to see if the levels were unhealthy. The printers released a substantial amount of particulates during the process of printing.	
Help Received I conducted the experiment on my own. I received help from my mentor Riccardo Magni with learning some methods of analysis and provided me with the monitor/equipment. I also received help doing research of printer years by my other mentor/assistant Ramon Morales.	