



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

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| <b>Name(s)</b><br><br><b>Nicholas Dorgan</b>  | <b>Project Number</b><br><br><b>J2106</b> |
| <b>Project Title</b><br><br><b>The Dark Side of Perfume: The Negative Effects of Perfume on Plants</b>  |   |
| <p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b><br/>The problem I am researching is how perfume is affecting plants in the natural world. Many people consistently use perfume in their everyday lives, but they do not realize how much perfume is negatively affecting the environment.</p> <p><b>Methods</b><br/>The unique materials used for this experiment were fast plant seeds, an artificial light source, a planter, and perfume. My procedure included setting up the artificial planter with the three groups (water, air, and control), along with creating the perfume mixture for the water group. I recorded the condition and heights of the plants every three days; and watered them twice a day, as well as replenishing the perfume in the air group once a day. I also closed the vents of the plants at night. The three groups correspond the where the perfume is being exposed to the plant, in the water, or air, respectively.</p> <p><b>Results</b><br/>My results aligned with, and supported, my hypothesis. The perfume groups not only had significantly lesser end heights compared to the control group, but also were consistently stunted since they sprouted. The water group was also slightly taller than the air group. Despite this, however, the plants still appeared to be green and healthy.</p> <p><b>Conclusions</b><br/>The experiment results suggest that perfume does have a negative effect on plant growth. The air group was most likely shorter than the water group because the materials in the perfume could not fit through the tubules bringing nutrients into and throughout the plants. Because of this, my conclusion is that perfume could be toxic in the environment and that while perfume provides benefit in masking our odor and making us smell better, which sounds like a plus, there could be a greater harm on the ecosystem and plants, which likely has a much greater negative impact on us in the long term.</p> |   |
| <b>Summary Statement</b><br><br>Perfume, both in a water solution and a misted/air solution, has a large detrimental impact on the growth of plants when compared to the control plants just grown with water.  |   |
| <b>Help Received</b><br><br>My science teacher, Mrs. Conklin, helped me formulate my research hypothesis and revise my conclusion, as well as answering any questions I had. My parents supported me in ordering the proper materials for my project. I set up the project, ran the experiment, and recorded all the data by myself.  |   |