



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Kelli Caruso; Garrett Dolphin	Project Number S0806
Project Title Point Source Plume Dispersion Due to a Rise in Elevation	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To observe and determine whether a higher or lower elevation release of pollutant would affect the pollutant levels within a city and also determine whether a "hot" would pollute a city more than a "cold" plume and whether the density of building organization had an effect on them.</p> <p>Methods/Materials Materials: 1. Legos; 2. A Lego Mat; 3. 2 Pencils; 4. Paper; 5. Camera; 7. Computer; 8. Dry Ice; 9. PVC Piping; 10. Screen; 11. Styrofoam beads; 12. Glue; 13. Wood; 14. Water; 15. Bowl; 16. PVC piping cutters; 17. Poppy seeds; 18. Stop watch; 19. Scale; 20. Tin foil; 21. Blow torch; 22. Ping pong balls; 23. Water hose for precautions.</p> <p>Results Our results were that a lower elevation release polluted the city more than a higher elevation release; that a cold plume polluted the more than a hot plume; and that lower density urban morphology gave the pollutant more room to circulate, hence giving a more polluted city.</p> <p>Conclusions/Discussion Pollutants released from a lower elevation facility will pollute nearby cities more intensely that a higher elevation release will and a lower flowing "cold" plume such as chlorine gas will generally circulate around in a city. Also, the higher density a city design is, the better its ability to disperse pollutants around and over the city rather than through it.</p>	
Summary Statement Our project is about exploring the dispersion of pollution throughout an urban city and how urban morphology affects the pollutant movement.	
Help Received Marko Princevac helped us understand the practical application for our project and allowed us to use his plume dispersion simulator; Vance Usui helped us develop and further our project and idea; Patrice Dolphin for providing art supplies and paper; Rick Caruso gave us building materials.	