



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Darren I. Apostol</b>	<b>Project Number</b> <b>J1802</b>
<b>Project Title</b> <b>Does Altitude Affect the Amount of Background Radiation?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this study is to see if the altitude of an area affects the amount of background radiation in it. <b>Methods/Materials</b> A cloud chamber, which shows the tracks of radiation particles that go through it in a mist, was used to detect radiation and its frequency, and was made using a lidded cup, felt, clay, rubbing alcohol as the mist, and dry ice as a cooling agent. I set up a cloud chamber at five altitudes above sea level: one at 20 ft. (by the sea), 200 ft. (city), 400 ft. (hills), 830 ft. (suburbs), and 1550 ft. (mountains). A video camera was used to record each in action for 10 minutes, and the recording was played back to count the number of radiation tracks. <b>Results</b> The 20 ft. trial had 50 tracks, the 200 ft. trial had 254 tracks, the 400 ft. trial had 61 tracks, the 830 ft. trial had 137 tracks, and the 1550 ft. trial had 171 tracks. This may indicate an increase in radiation as altitude goes up. <b>Conclusions/Discussion</b> My hypothesis was that background radiation increased with altitude, and the experimental results support it. Excluding the trial at 200 ft., which was the only trial based in a city, the experiments showed an increase in radiation tracks as the altitude went up. The city trial was excluded due to factors such as increased radioactive material (like some heavy metals) in construction materials.	
<b>Summary Statement</b> By testing the amount of background radiation at different altitudes, I discovered that it is affected by altitude and increases as altitude goes up.	
<b>Help Received</b> None. I researched about and built the cloud chamber myself and researched independently about background radiation.	