



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kristin N. Miller</b>	<b>Project Number</b> <b>S1413</b>
<b>Project Title</b> <b>The Hidden Dangers of Ozone Depletion: Is Our Food Supply at Risk? Part II</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The effects of ozone depletion and resulting increased amounts of ionizing radiation in our environment are under investigation. What effects might these increased doses of radiation have on our food supply? <b>Methods/Materials</b> Four groups of Early Girl Tomato plants were exposed to ultra low, moderately low, and low doses of radiation respectively, twice weekly. Group One was the control group and received no radiation. The five groups were measured in centimeters once weekly to determine any difference in growth. At the end of ten weeks, the plants and tomatoes were weighed. The tomatoes were also counted. <b>Results</b> The control group had the greatest growth in terms of height, weight, and total number of tomatoes. Group One had a height increase of 224%, while the other groups had an average 150% increase. Also, the control group's tomato production was five to ten times greater than that of the experimental groups. The experimental plants average total weight (including tomatoes) was 47% less than the control group. <b>Conclusions/Discussion</b> Overall, the effects of ionizing radiation seemed to have a detrimental effect on the health of the plants, as measured by growth rate, tomato production, and overall weight. If all plants in our environment share this sensitivity, it could lead to a decrease in food production, as well as a decrease in carbon dioxide absorption and oxygen production. Ultimately, this could cause food shortages and an acceleration of global warming.	
<b>Summary Statement</b> Ozone depletion allows for more ionizing radiation to be transmitted to the surface of the earth, with a possible impact on our food supply.	
<b>Help Received</b> Used linear accelerator at Los Robles Hospital, with the help of Jesse Lee (physicist) and radiation therapists.	