



# CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

<b>Name(s)</b> <b>Kaitlyn A. Arst</b>	<b>Project Number</b> <b>J1001</b>
<b>Project Title</b> <b>Citrus Peel Extracts and the Reduction of Styrofoam Pollution</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this experiment was to find an eco-friendly solution to the Styrofoam pollution problem. This was done by applying citrus extracts from oranges, lemons, and grapefruits onto several six-inch Styrofoam plates to see if the Styrofoam would disintegrate.</p> <p><b>Methods/Materials</b> Oil, juices and a homemade solution were extracted from grapefruit, oranges and lemons. These 3 different types of solutions were then spread onto Styrofoam plates. The Styrofoam plates were buried into containers filled with sand to see if it would deteriorate in landfills.</p> <p><b>Results</b> The results showed the hand squeezed orange, lemon and grapefruit oil peels all worked to deteriorate the Styrofoam plate. The homemade solution and juices did not deteriorate the Styrofoam. The Styrofoam, with the orange oil peel extract, deteriorated the most. It had a 1-cm hole by day four. The lemon oil peel extract was the second best. On day four, the largest hole was 0.01 cm. The grapefruit oil peel extracts was the least effective. The largest hole measured 0.0001 cm by day four.</p> <p><b>Conclusions/Discussion</b> My conclusion is that hand squeezed orange peel oil disintegrate the Styrofoam plate the best. My hypothesis that hand squeezed lemon peel oil would work the best has to be rejected. It was not as strong as the orange peel oil. All the citrus fruit oil peels I tested were able to disintegrate Styrofoam. Only the oil from the peels, not the juice from the inside of the fruit or homemade solution was able to dissolve the Styrofoam. Next time, I would like to test different variety of citrus fruits to see if they are able to help Styrofoam deteriorate.</p>	
<b>Summary Statement</b> The purpose of this experiment was to find an eco-friendly solution to the Styrofoam pollution problem.	
<b>Help Received</b> My mom made sure I safely performed my experiment and took some of the photos.	