



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Cailan A. Ackerman</b>	<b>Project Number</b> <b>S0601</b>
<b>Project Title</b> <b>Absorption of Glyphosate Based Herbicides by Microbeads</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this study is to determine whether or not microbeads are able to absorb glyphosate from water. <b>Methods/Materials</b> Separated microbeads from products, prepared three concentrations of pure glyphosate and DI water (0, 120, and 170 ppb) for testing. Added concentrations and beads together in cryogenic vials and placed them on a shaker for 74 hours. Collected water samples from each at 0, 5, 12, 24, 28, and 74 hours. Ran all the samples through an HPLC system to determine the concentration of glyphosate. <b>Results</b> The microbeads absorbed glyphosate at both the concentrations. They were able to accumulate the glyphosate over the course of 74 hours. <b>Conclusions/Discussion</b> These results indicate that the microbeads can absorb the glyphosate from the water. This implies that they are capable of carrying them into the food chain as they are the same size as many small aquatic organisms food. So not only are the organisms ingesting the plastic, they are also ingesting the pollutants that they carry as well.	
<b>Summary Statement</b> I found that microbeads are capable of absorbing glyphosate from aquatic ecosystems.	
<b>Help Received</b> My teacher Dr. Malhotra let me use her HPLC system and Dr. Gregory Cauchon also aided in my HPLC method and trouble shooting. Mr. Stiv Wilson also provided valuable information about microbeads as he is the lead researcher on them and responsible for the bill that passed to ban them in California.	