



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Shelbie Fay Strykers	Project Number J0819
Project Title The Absorption Rate of Natural Substances in Soil	
Abstract Objectives/Goals For my science project I investigated how well natural materials absorb pesticides and herbicides. Methods/Materials I determined which natural materials absorb the poisons best by adding daphnia, a small water flea, to water that had been exposed to the pesticides and herbicides. First, I put one cup of regular gardening soil into 30 plastic cups and separated the cups into 6 groups, each group containing 5 cups. Next, I mixed in 1/2 cup of 4 different natural materials (ashes, wood shavings, lemon tree leaves, and orange peels.) I then added 1/2 cup of ashes to 1 cup in each group and did the same for every other type of natural material. One cup in each group was left with a plastic cup containing only soil. Then I labeled the pesticides and herbicides A-F and added the poisons to the cups. I poured 1/2 cup of pesticide A into every cup in one group. I did the same for every other pesticide and herbicide, each time using a new group of cups. I then left the cups untouched for a week. At the end of the week, I inserted a sheet of filter paper into a funnel and placed the funnel into a container. I chose one cup of soil and emptied the soil onto the filter paper. Next, I poured one cup of water onto and through the soil, collecting the water underneath with the funnel and container. Once all the water was in the container, I added 10 daphnia to the water and recorded how long it took for all the daphnia to die. Results The results of my investigation indicates that the water exposed to the soil containing wood shavings took the longest to kill the daphnia, meaning that the soil mixed with wood shavings absorbed the poisons the best. The average daphnia death rate was approximately 7,445 seconds (about 2 hours.) The water exposed to soil mixed with lemon tree leaves killed the daphnia the fastest, meaning the soil with leaves absorbed the poisons the worst. The average daphnia death rate was approximately 704 seconds (about 11 minutes.) Conclusions/Discussion In conclusion pesticides and herbicides are less toxic when added to soil mixed with wood shavings, so people spraying pesticides onto plant life should not use soil with wood shavings or wood chips in it. I also learned that contaminants, including the ones I tested, could be extremely harmful to our aquatic life.	
Summary Statement My science project is about how natural substances in soil effects the absorption rate of pesticides and herbicides.	
Help Received My mother helped me put pictures and data on my science display board, and developed my science project pictures.	