



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

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Project Title Microbial Components of the Byproducts from the Transesterification of Soybean Oil	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project is to determine whether microorganisms thrive in an environment consisting of the by-products of the transesterification of soybean oil.</p> <p>Methods/Materials One year old samples and recently synthesized samples of biodiesel by-products were analyzed for microbial content. For comparison, sealed and opened flasks of both aged and recent biodiesel by-products were placed in outdoor and indoor conditions where there was a difference in light and temperature. In order to culture the microorganisms, samples were inoculated into Spirit Blue Agar Petri dishes. Gram stained and unstained specimens were examined under a microscope to assist in the identification of the unknown microorganisms. Tests for acidity were done to determine if it is a factor for growth and for comparison purposes.</p> <p>Results Some of the organisms inhabiting biodiesel by-products consist of gram-negative bacilli and cocci. Colonies of microbes appeared and began growing in the Spirit Blue Agar Petri Dishes after eleven days. More changes occurred in the flask of samples exposed to outdoor conditions compared to samples placed indoors.</p> <p>Conclusions/Discussion Through our analysis of the by-products from the process of synthesizing biodiesel, we found that there are microorganisms thriving. Exposure to the conditions of an outdoor environment seems to enhance the growth of the bacteria because the increased growth was observed in both the sealed and open flasks. Through microscopy, we discovered that one of the possible organisms present is yeast, in which certain species use lipid (present in the by-products) as a carbon source. For further studies, we plan to determine the effects these microorganisms have on the biodegradability of biodiesel.</p>	
Summary Statement This project focuses on the microbial components of biodiesel by-products and the environmental factors that promote the growth of the microorganisms.	
Help Received Used lab equipment at PCC under supervision of Kathy Talaro, student at PCC helped revise report	