



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Lilia Tomoff	Project Number J1323
Project Title Squeaky Green: Environmentally Friendly Exfoliating Soap	
<p style="text-align: center;">Abstract</p> <p>Objectives This project addresses the need for an exfoliating soap that does not pollute ocean ecosystems with harmful plastic microbeads.</p> <p>Methods The designed product was a rectangular bar soap in translucent green which uses locally-sourced sand as an exfoliant, as well as tangerine essential oil. The engineer also considered adding either turbinado sugar or sea salt as additional exfoliant, eventually deciding on turbinado sugar due to its many benefits to skin. The prototype was tested using consumer surveys addressing the scent, abrasiveness, dissolving, cleansing, and overall desirability of the product; as well as simulated testing addressing the abrasiveness, dissolving, and cleansing properties of the soap as compared to a generic bar soap.</p> <p>Results The prototype was tested through consumer testing and simulated conditions. The consumer test collected user opinions of the scent, abrasiveness, dissolving, cleansing, and overall desirability of the product. The simulated testing collected data addressing the abrasiveness, dissolving, and cleansing properties of the soap as compared to a generic bar soap. The simulated testing revealed that the exfoliation provided by the soap was extremely effective, and that its dissolving and cleansing properties were comparable to the generic bar soap. The results of the consumer testing showed that the majority of users found the soap very desirable.</p> <p>Conclusions This project demonstrated that it is feasible to create an exfoliating soap using locally sourced sand. Adoption of this product instead of commercially available exfoliating soap using plastic microbeads would have two main benefits. First, ocean ecosystems would benefit when local sand instead of plastic microbeads is deposited into the ocean. Second, consumers would benefit from the use of tangerine essential oil instead of potentially harmful acids as the secondary exfoliant in the soap.</p>	
Summary Statement I created an appealing and ecologically responsible exfoliating soap using locally sourced sand and tangerine essential oil.	
Help Received My science teacher provided guidelines and a production timeline for creating a successful engineering project. My mother supervised the soap-making process for safety purposes.	