



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Virginia R. Dick	Project Number S1304
Project Title The Application of a Clay Flocculate in Mitigating a Harmful Algae Bloom: Effects on the Growth of Mytilus edulus	
Abstract Objectives/Goals As many economically challenged countries develop commercial shellfish markets, its citizens become more susceptible to biotoxins produced by harmful algae blooms that are stored in the tissues of shellfish. The objective of the project is to obtain a viable method for clay flocculate mitigation of cells in a harmful algae bloom with little or no effect on the shellfish population. The student desired to observe the effect of Magnesium Silicate Hydroxide (Talc) applications on a juvenile culture of Mytilus edulus. Methods/Materials The 40 Mytilus edulus individuals were retrieved from local San Diego Bay waters, individually labeled, and placed in wire baskets. The wire baskets hung inside five-gallon drums, 20 mussels in a control drum and 20 in a test drum. Every day for four weeks, a slurry of 100 grams of Talc in 100 grams of water was applied to the test population using a kitchen baster. At the end of each week length, width, and thickness of the mussels were measured using a shellfish caliper. Comparisons in the two populations total change in growth over the weeks were calculated and compared. Results Results of the four-week, continuous application study, showed that Magnesium Silicate Hydroxide did not have a negative effect on the growth of the Mytilus edulus, but actually increased the growth of the treated Mytilus edulus juveniles. In effect the hypothesis stating that the Talc applications would limit the growth of Mytilus edulus, was not only proven false, but the treated mussels had a 29% increase in growth compared to the control mussels. Conclusions/Discussion As the result of this study, it was concluded that a daily application of Magnesium silicate hydroxide does not limit the growth of Mytilus edulus, but instead promotes growth. The results show potential for the use of Talc in mitigating toxic algae blooms in areas of commercial shellfish production. Hopefully with more research, Magnesium silicate hydroxide will become a widely used mitigating agent and through its use, help to convince society of the importance of harmful algae bloom prevention.	
Summary Statement This project is the continued study of clay flocculates and their mitigation effects on the growth of local Mytilus edulus juveniles.	
Help Received Father provided literature and knowledge; used lab equipment and cage designs from Gregg Langlois at the California Department of Health Services: Phytoplankton Monitoring Program	