



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Mummery N. Natalie	Project Number 36834
Project Title Does Plastic in the Ocean Affect the Filtering Mechanism of the Common Mussel, <i>Mytilus californianus</i> ?	
Objectives/Goals The purpose of my science project was to see if plastic in the ocean affects the ability of mussels to filter a fungicide containing copper from the water. My hypothesis for this project was that the mussels filtering mechanism will be diminished by the plastic in the ocean because the plastic will affect their filtering capabilities and potentially harm them. Abstract Methods/Materials Two tanks containing mussels, one with fine plastic powder. Each tank contained an equal amount of copper based fungicide in the water. Measured the concentration of copper in the water after 2,3, & 4 days to determine how much of the fungicide was filtered out. Results All of the mussels died. The mussels in the tank with the plastic (Tank 2) died the second day of the experiment. The mussels in the tank without the plastic (Tank 1) died on the fourth day of the experiment. I then took a copper test to determine how much of the fungicide they had filtered out. The mussels in Tank 1 were able to filter out 2ppm out of the 4ppm. The mussels in Tank 2 did not filter any out. All of the mussels died due to their low tolerance for copper found in the fungicide. The fungicide I used, Nature's Care Garden Disease Control, is 0.08% copper and 99.92% other ingredients. The second day of the experiment, in Tank 2, the water had a thick layer of foam on the surface of the tank as well as a foul odor. On day four, Tank 1 had a thinner layer of foam on the surface of the tank and the smell was less foul than Tank 2. This was not the expected outcome. Conclusions/Discussion In conclusion, my hypothesis was correct. The mussels in Tank 2 died because the plastic chemically reacted with the fungicide. I know this because after observing the layer of foam in Tank 2 I tried to duplicate the reaction by taking a sample of the water in Tank 1 and adding some plastic. I then added some fungicide since the mussels in Tank 1 had filtered out 2 ppm. I mixed it together and about 30 minutes later a foam layer started to form. This tells me that the combination of plastic and agricultural runoff in the ocean is quite harmful to mussels and other marine life.	
Summary Statement I showed that plastic in the ocean is harmful to filter feeders, specifically mussels.	
Help Received My Science Teacher helped me obtain the materials for my experiment.	