



# CALIFORNIA STATE SCIENCE FAIR

## 2015 PROJECT SUMMARY

Name(s)

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Project Number

35277

Project Title

**Marinas: Toxic or Safe?**

### Objectives/Goals

Antifouling boat hull paint contains biocides and copper which can harm sea creatures and even humans. There are other kinds of boat hull paints that are environmentally safe and not toxic to the environment. However, these environmentally safe boat hull paints are not considered as effective as the copper based boat hull paint.

Is there anything we can add to environmentally safe boat hull paint to make it as effective as anti-fouling copper based boat hull paint, and keep it nontoxic to the marine environment?

### Methods/Materials

When first setting up the project we cut the marine grade plywood into a rectangle that is 1.67ft. by 2.5 ft. We then add the vanilla extract, lemon extract, and cayenne pepper to the environmentally safe paint. From personal communication with a local marine store worker we found out that some commercial fisherman add cayenne pepper to boat hull paint (Richardson C. pers. comm. 2015). Next we painted five equal rectangles, 0.5 ft. by 1.5 ft. on the marine grade plywood, one rectangle with copper based paint, one with environmentally safe paint, one with lemon extract, one with vanilla extract, and the fifth with cayenne pepper. Every week for four weeks between January 20 and February 7, again on February 28, and on March 14 we checked our project. Each week we counted the marine life observed on each of the Paint Patches.

### Results

We only observed silt and invertebrates on Paint Patches in the first four weeks. However, we observed green algae and seaweed on Paint Patches B and C, and green algae on Paint Patches D and E during our last two visits. Current algae coverage on Paint Patches is as follows: A = 0%; B = 91%; C = 68%; D = 72%; and E = 35%.

### Conclusions/Discussion

As of March 14, 2015 our hypothesis was correct. The environmental safe boat hull paint that contained cayenne pepper (Paint Patch E) had the best results out of the four environmentally safe paint patches. The copper based boat hull paint (Paint Patch A) still had no algae growth and the least amount of life overall. Both Paint Patch A and E did a really good job keeping invertebrates off the marine grade plywood. However, green algae did cover 35% of Paint Patch E on March 14.

### Summary Statement

Our project is about trying to find a replacement for copper based boat hull paint.

### Help Received

My father helped us cut the board and drove us to the marina to set up and check our experiment every week or two.