



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Emily Birch	Project Number J1004
Project Title What Is the Relationship between Turbidity Levels in Water and the Amount of Dissolved Oxygen?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Our world is water. I wanted to show how chemicals like sodium phosphates can effect algae growth and the water it's in. I wanted to show something that is happening in the world. Phosphate pollution in ponds and rivers is an issue that we can't just ignore. My hypothesis stated that as algal turbidity levels rise, dissolved oxygen concentrations also increase.</p> <p>Methods/Materials I used 5 Tetra Whisper pumps, 5 22x34x13cm plastic tanks, 280mL sodium phosphates, Flinn Scientific dissolved oxygen test kit (30 dissolved oxygen TesTabs, dissolved oxygen color comparison chart, test vial) EXTECH Foot Candle Lightmeter, 10mL graduated cylinder, and Celsius thermometer. To test dissolved oxygen, I got an overflowing sample of the water to be tested in the vile. I inserted 2 TesTabs into the water. When the tablets dissolved, the water turned an orange color. I compared the water's color with the color comparison chart and got a reading in parts per million. To test turbidity, I put the flashlight on one side of the tank. On the opposite side I put the lightmeter. As the light from the flashlight shown through the water, some was scattered by the algae. The light that didn't scatter continued to the lightmeter, which took in the light.</p> <p>Results Throughout the experiment, PPM readings stayed close. Tank3 had 8PPM of dissolved oxygen. Tank3 also had the lowest amount of foot candles, so it was the most turbid. Tank3 proved my hypothesis to be correct. When more algae is growing in the water, more photosynthesis is being performed, resulting in the release of more oxygen.</p> <p>Conclusions/Discussion As algal turbidity levels increase, dissolved oxygen concentrations increase. Tank3, which received 4mL of sodium phosphates, grew the most algae. This resulted in the more scattering of light. The phosphates provided nourishment for the green algae. As the algae grew and divided, dissolved oxygen increased due to more algae in the water performing photosynthesis. The algae was able to perform phtosynthesis during the day and release oxygen because the sun was giving light. At night, there was little sunlight, so the algae was unable to perform phosynthesis. The algae had to suck oxygen out of the water so it could "feed" itself. When fertilizers are washed into ponds, they enhance algae growth. As the algae rapidly grows, it produces more oxygen. Too much algae in the water can be harmful and eventually fatal to other organisms.</p>	
Summary Statement I wanted to show how algal turbidity can affect dissolved oxygen because it is affecting our environment today through fertilizer run-off.	
Help Received Step-father and brother helped test turbidity; Teacher provided sodium phosphates and pumps through the school's grant money.	