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|  | Doing this experiment we discovered the procedure was a lot more in dept than we had preveously suspected based on our knowledge from Thomulka's paper, ["Is Your Water Fit For Drinking?"](http://204.202.137.113/sections/science/MadRad/madrad981113.html) Talking to Mrs. Waters we discovered we needed to obtaine a Gyrotary shaker and many other chemicals that Thomulka never adressed in his paper. Because we were unable to get this equipment we were unable to complete this experiment the way we expected to. Instead of being able to test the chemicals and the Arroyo Del Valle creek water with Vibrio harvyi the way we explained in our experiment we decided to try Thomulka's way. So for our experiment we were unable to complete the data.  In our experint we believe we should have seen a number of outcomes bassed on the research we did. First of all, making the culture and innocculating loop would have caused a bioluminescence light or not have allowed us to see one. If the sollution we subjeceted the Vibrio harveyi was very polluted we expected to see the biollulinimscent light disipered rapidly due to what David George Gordon said in ["Is Your Water Fit For Drinking?"](http://204.202.137.113/sections/science/MadRad/madrad98113.html) He explained that by adding a batch of Vibrio harvyi to "an ascetic diet of Knoc gelatin, salt and beef bouillon" pollution can be detected(Gordon). He also explains that "if the water has dimmed or is no longer glowing, it's because something's poisoned the bacteria" (IBID).  Using Vibrio haryvi we would have tested three of the chemicals writen in Thomulka's chart. The chemicals we choose were: Cupric sulfate, Hydrogen peroxide, and Sodium hypochlorite. By following Kenneth Thomulka's results in his table we were planning on comparing our results with his to make sure they are relible sources. In his experiment the "Use of the Bioluminescent Bacterium Photobacterium phosphoreum to Detect Potentially Biohazardous Materials in Water" (Thomulka) he used a bioluminescence called Photobacterium phosphoreum. Vibrio harvyi is more sensitive so we expected to see a litte different results.  With Hydrogen peroxide we expected to see it take a little bit of of Vibrio harvyi to reduce the bioluminescent glow 50%. In Thomulka's results it took 1.8 ppm of Photobacterium phosphoreum to reduce the bioluminescence 50%. With Vibrio harvyi we expected it to take less ppm's to reduce the bioluuminescence because it's less sensitive. Hydrogen peroxide was expected to be shown as a little toxic.  With Sodium hypochlorite we expected to add less Vibrio haryvi to reduce the bioluminescent glow by 50% than we did with Hydrogen peroxide. The Sodium hypochlorite was more toxic than the other chemicals we tested. In Thomulka's table he added  0.016 ppm of Photobacterium phosphoreum to reduce the bioluminescence by 50%. We expected to add even less Vibrio harvyi to the culture to reduce the bioluminescence by 50%. Sodium hypochlorite is toxic because it does take less Vibrio harvyi to reduce the the Bioluminescence.  Looking at Cupric sulfate we expected the Vibrio harvyi to not affect the Bioluminescence because as Thomulka's table states it takes >100 ppm's of Photobacterium phosphoreum to affect the bioluminescence. We would expect the same results with Vibrio haryvi.  **Data Table of What We Expected Based on Thomulka's Research**     |  |  |  | | --- | --- | --- | | Compound | Amount of Photobacterium phosphoreum to Reduce Bioluminescence by 50% | What We Expect to See  (- very dim)  (-/+ dim)  (+ some effect on light)  (++ very bright, no effect on light) | | Hydrogen peroxide | 1.8 ppm | (+) | | Sodium hypochlorite | 0.061 ppm | (-/+) | | Cupric sulfate | >100 ppm | (++) |   **At our seven sites we expected to see many different things.**  **Site One**  **Site One was at the beginning of the creek in Pleasanton. At this site Shadow Cliff Lake dumps into the creek. We believe that at this site the water would have been fairly polluted due to the garbage we saw while collecting our water. Because we thought that the water was polluted we expected to see the bioluminescence dim because something is poisoning the bacteria (Gordon).**  **Site 2**  **Site Two is a spot down town next to Amador High School and The Pleasanton Hotel. This spot has been studied by Amador students for many years. Many things have been noticed. There have been a few occaations that a company has dumped soap into the creek and it has been detected. Also there are trails down by the creek that many people walk along with thier dogs or ride their bikes. It is heavely traveled upon and we think because of this the creek waater was very polluted. We believe if testing the water we would haave seen the bioluminscence very dim.**  **Site 3**  **Site Three is right after site two after a train bridge. At this site the water runs quickly and it is further away form the traveled along path. because of this we believe that there would not be as much pollution in the creek at this area causing the bioluiminescence to have some effect on the bioluminsecence.Also there are less variables like dissolved oxygen due to the fast moving water in theis area. Due to these variables in this area we felt that this water would cause the Vibrio haryvi to glow for a longer time before the bacteria is poisoned.**  **Site 4**  **Site four is right next to the Pleasanton Golf Drive and the Pleasanton Fairgrounds. In this area at the Arroyo Del Valle there are few walkers and people are not in the area very much. Here we believe that the water is some what polluted because of being so close to the golfing range and fairgrounds. We belive that the water will be dim and the brightness will not glow very long.**  **Site 5**  **Site five is between the site four and Arroyo De La Laguna. It is not traveled on very much and pretty secluded. At this site the water is running fast and we believe it is not very polluted. Therefore we feel that the bioluminescence will produce a dim light.**  **Site 6**  **Site Six is Arroyo De La Laguna right before where Arroyo Del Valle dumps into it. Here the free way passes over the creek and surronding the creek is trash thrown out by cars. We expect to see this area of the creek very polluted due to the trash we found surronded. We believe the bioluminescent glow will dim very quickly. There may not even be a glow that can be seen.**  **Site Seven**  **Site Six is Arroyo De La Laguna and is right after the spot where Arroyo Del Valle dumps into it. At this site thewater is running fast and it is not very accesable to people. Here we believe the water will not be very polluted but because the Arroyo Del Valle dumps into it the water may be polluted. We think the bioluminescence will be dim due to the pollution in the water, but there will still be a glow.**  **Our Expected Data Table of the Arroyo Del Valle Creek Pollution**     |  |  | | --- | --- | | **The Sites We Where Going to Test** | **What we Expected to Find when Testing the Arroyo Del Valle For Pollution Using Vibrio harvyi**  (- very dim)  (-/+ dim)  (+ some effect on light)  (++ very bright, no effect on light) | | **Site One** | (-/+) | | **Site Two** | (-) | | **Site Three** | (+) | | **Site Four** | (-/+) | | **Site Five** | (-/+) | | **Site Six** | (-) | | **Site Seven** | (-/+) | |

*This Web Site is Best viewed with 256 or more colors.*

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