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|  | When I first sat down to consider my A.P. Biology project, I had a totally different idea in my mind than what I actually ended up doing. My first idea was to do a project involving a population study of flatworms and how the presence of pollution in their environments dictates their survival within an aquatic setting. I planned to collect water samples from the Arroyo Del Valle and test them for pollutants. I would then locate flatworms from within that same environment and see if their presence is effected by the presence of certain pollutants within the water.  Once I had my idea, I set out to make some calls in order to determine how I would test the water that I collected for pollutants. I called various labs, water treatment centers, as well as environmental consultants, in search of answers to how I would conduct my experiment. After first calling local pollution experts and contacts such as the Zone 7 water agency lab, the city of Pleasanton, and the Pleasanton water treatment facility, I was left with several excellent contacts. During my search I had several offers to come in and see the labs in which they test for pollutants in water. As I continued to call, I finally found the man that I was looking for to answer all my questions.  Kurt Klein, who works at a lab in Rhonert Park, is this man. After I explained to him what I was planning to do for my project, he gave me some valuable feedback. His gave me both good news and bad news. First, Mr. Klein told me that what I was proposing to him was much to complex for someone like me with no access to the high tech equipment necessary to test for pollutants. This was the bad news, but I did not get discouraged because he had an idea for me.  Mr. Klein proposed that instead of testing the water for pollutants, I should test the soil. He offered to send me a case study explaining the experiment. I would actually be getting sediment samples from the Arroyo Del Valle and submitting organisms into the soil over an extended period of time. The results of the experiment would give me a quantitative comparison of toxicity among sites along the creek.  Once Mr. Klein finished explaining his suggestion I knew that his experiment was much more realistic than what I was proposing. I decided to do a sediment toxicity test at the Arroyo Del Valle.  In order to gain a relative comparison of toxicity along the creek, I tested five sites. These sites ranged from the dam at Del Valle to the 680 freeway. To test for the relative toxicity among the sites I submitted a type of fly larvae, Chironomus tentans (described in more detail in the experiment section), to each sample. Their relative growth patterns would show relative toxicity among sites.  Chironomus tentans has been used successfully in sediment toxicity tests because it has a short generation time, has fairly large eggs, and the larvae have direct contact with the sediment by burrowing into the sediment to build a case. C. tentans have been used successfully in sediment toxicity tests and is sensitive to many contaminants associated with sediment. The members of this genus including C. tentans are important in the diets of young and adult fish and surface feeding ducks.  The larval stages of C. tentans are often found in lakes and ponds full of nutrients. Larvae occur most often in fine sediment but are often found, and can survive, in sediment with particles ranging from <0.15mm to 2.0mm. The larvae usually occur in the upper 10cm of the sediment. Water temperature should range from 0 to 35 degrees Celsius and pH should range from 7 to 10.  The life cycle of C. tentans is divided into three stages: (1) a larval stage; (2) a pupal stage; and (3) an adult stage. The egg cases hatch in 2 to 3 days in water of temperature 19 to 22 degrees Celsius. Under perfect conditions, larvae will emerge as adults after 24 to 28 days at 20 Celsius. The adults emerge from their pupal cases over a period that lasts several days. The males are very easily distinguished from the females because males have large antennae and a much thinner abdomen with visible genitalia.  The company that I ordered C. tentans from is called Aquatic Bio Systems, which is located in Fort Collins, Colorado. The eggs were deposited in the laboratory on 3/26/98 and when they were shipped on 4/6/98, they were 11 days old and in their second instar of their larval stage. I ordered 120 larvae which was sufficient for the needs of my experiment. The larvae were shipped overnight mail, and I received them on 4/7/98. I immediately began my experiment when I received them. |

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

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