



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

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Project Title
Is the Creek Water Safe for Animals to Drink?

Abstract

Objectives/Goals
My Hypothesis is that the water in the creek is very. I also think that there will be some kind of really unhealthy bacteria that is growing in the creek. I think that because whenever Mr. Wright's horses drink out of the creek, they get dizzy and just lay on the ground. So with that information, I am hypothesizing that the horses are getting sick from the creek water.

Methods/Materials
Water testing kit (Environmental and Outdoor Water Full Panel plus Bacteria Growth Kit), and several samples of water. The kit tests for the following parameters: pH, Alkalinity, Water Hardness, Total Dissolved Solids (TDS), Nitrate, Nitrite, Phosphate, Dissolved Metals (Combined Metals Cu+2, Co+2, Zn+2, Cd+2, Ni+2,etc.), Iron +2 and +3, plus Bacterial growth.

Results

1. Bacteria Growth - Average $>10^4$ of fastidious bacteria growth in a 48 hours time period.
2. Total Dissolved Solids(TDS)- Average TDS was 200ppm.
3. Nitrate plus Nitrite - Nitrate Average was 0.5mg/L & Nitrite was 0mg/L which are below the EPA limits of Nitrate (10mg/L) & Nitrite (1.0 mg/L)
4. Total Hardness - The average of 308 ppm showed that the creek water is very hard.
5. pH - The samples showed a average of 9 which makes the water more basic than acidic.
6. Iron (Fe^{+2,+3}) - The test results showed no signs of Iron in the water.
7. Dissolve Metals - The average result was 166.7 ppb
8. Alkalinity(CaCO₃) - The results showed an average 240 mg/L or ppm, which again showed that the water again was more basic than acidic in nature.

Conclusions/Discussion
My Hypothesis that the creek water had harmful bacteria was correct. The water showed signs of substantial bacteria growth within 48 hours. Along with the bacteria testing, the water was also tested in seven other parameters that, in general were less harmful in nature than aerobic bacteria, and the results showed no other high signs of other harmful materials in the water.

Summary Statement
What is causing horses drinking out of a creek to become sick?

Help Received
Mother helped type report and father helped in gathering water samples & running tests.