CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J0703

Project Title
Which Type of Sedimentary Rock Is the Best Storage Rock for Petroleum Oil?

Abstract

Objectives/Goals
The purpose of my project is to determine which type of sedimentary rock makes the best storage rock for petroleum oil. The reason I am doing this project is because oil reserves are scarce and it becomes more and more difficult each year to find new reserves.

Methods/Materials
I used limestone, sandstone and shale as my sedimentary rock samples. Ten samples of each rock were used. I weighed each rock on a triple-beam balance to record beginning weight. I then placed each rock into separate clear plastic cups. I measured a quarter-cup of mineral oil and drew five drops from it and then placed those drops onto the rock. Using a stopwatch I then recorded the time the rock took to absorb the oil. I poured the remaining quarter-cup of oil onto rock in cup to soak overnight. This process was done individually to ten samples of each rock for a total of thirty rocks. The next morning I used tongs to remove each rock from each cup and weighed each rock again on the triple-beam balance. After recording the end weight of each rock I then subtracted the beginning weight from the end weight of each rock to see how much oil each rock absorbed. I recorded all data and observations during my testing.

Results
The results of my testing showed that limestone proved to be the best storage rock by time and amount of oil held. Limestone took an average of 25 seconds to absorb 5 drops of oil and held an average of 3.6 grams of oil after an overnight soak in oil. Sandstone took an average of 51 seconds to absorb 5 drops of oil and held an average of 2.3 grams of oil after an overnight soak in oil making sandstone the second best storage rock by time and amount of oil held. Shale took an average of 86 seconds to absorb 5 drops of oil and held an average of 1.5 grams of oil after an overnight soak in oil making shale the worst storage rock by time and amount of oil held.

Conclusions/Discussion
After completing my investigation on which type of sedimentary rock is the best storage rock for petroleum oil, I found that my hypotheses were incorrect because I believed that sandstone would be the best storage rock by time and amount of oil held. In conclusion, my findings indicate that petroleum engineers and geologists should consider using the latest technology to specifically locate limestone rock underground when searching for oil to aid in reducing drilling "footprints".

Summary Statement
This project is to determine which sedimentary rock makes the best storage rock for petroleum oil.

Help Received
Science teacher let me borrow triple-beam balance. My mom helped to type some of my written work and photograph the experiment.