CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J0503

Project Title
Adjusting Chlorine Level to Minimize Evaporation Loss of Pool Water

Abstract

Objectives/Goals
My objective was to determine whether water used in pools could be conserved by adjusting the concentration of pool chlorine (sodium hypochlorite) in order to minimize the evaporation rate of the pool water.

Methods/Materials
Eleven 1000ml beakers were prepared with different concentrations (from 0% to 100%) of pool chlorine (6% sodium hypochlorite solution) in distilled water and placed in a room with constant temperature, pressure, air flow and humidity for one week. (Household bleach, or 6% sodium hypochlorite solution, was used as a surrogate for pool chlorine because it is the same compound but less concentrated than pool chlorine tablets or solution.) The fluid remaining in each beaker after 168 hours (7 days) was measured and recorded. The experiment was conducted three times for each concentration, and an average was calculated.

Results
I discovered that the greater the concentration of pool chlorine in the beaker, the slower the evaporation rate.

Conclusions/Discussion
My results suggest that pool water can be conserved by adjusting the level of chlorine in it. The evaporation rate of swimming pool water can be reduced by maintaining the highest concentration of pool chlorine acceptable for human use. The evaporation rate of other pools, such as fountains, can be reduced by increasing the concentration of pool chlorine in the fountain water. People should be encouraged to be careful to keep chlorine at the right level so that water can be conserved.

Summary Statement
My project determines if pool water can be conserved by adjusting the concentration of chlorine (sodium hypochlorite) to minimize evaporation loss.

Help Received
My parents supervised my use of sodium hypochlorite, and my aunt showed me how to use Excel to make the charts and graphs.