



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Haylie Hansen; Kristen Jundt	Project Number S0210
Project Title Moisture Migration through Concrete	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This continuation project progresses from examining the effects that subgrades and vapor barriers have on concrete moisture emissions; in order to study vapor pressures, which will allow us to observe the limitations of moisture testing equipment including calcium chloride testing kits.</p> <p>Methods/Materials Our research has shown us that moisture floor covering problems still occur on concrete slabs even when calcium chloride testing has been used to indicate the concrete is dry enough to accept a floor covering. This project investigates the role water vapor pressure plays on moisture migration, utilizing data loggers to record temperature, humidity, and dew point above and below the concrete samples. We exposed the test samples to different variations of heat using insulation boxes that we made.</p> <p>Results Test samples were exposed to sunlight in the testing dome when the concrete was dry and their change in humidity was 6%. When they were exposed to sunlight below the concrete the results were similar. Furthermore, when the concrete samples were wet relative humidities, when exposed to sunlight in the testing dome, decreased by 5%. When they were exposed to sunlight below the concrete the results were similar. However, the calcium chloride test kits became saturated when the wet concrete samples were exposed to sunlight in the testing dome, but the test kits did not become saturated when the buckets below the concrete samples were exposed to sunlight.</p> <p>Conclusions/Discussion Our results meant that calcium chloride kit results are affected by environmental changes because relative humidities were staying stable, but calcium chloride test kit results were varying wildly when the buckets were exposed to varied environmental conditions. The results of this experiment will assist in modifying moisture migration test procedures to insure that results will become a more accurate measure of moisture migration.</p>	
Summary Statement We studied the limitations of calcium chloride kits, which measure moisture migration through concrete as they were exposed to varied environmental changes.	
Help Received Kristen's dad, Hugo Kevorkian with BSK Laboratories and Associates, Eddie Robinson with Stonehard, Ashok Kahkade with Concrete Sciences	