



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kristen R. Ewert</b>	<b>Project Number</b> <b>J0804</b>
<b>Project Title</b> <b>Refrigeration 9-1-1</b>	
<b>Abstract</b> <b>Objectives/Goals</b> After reading about the tsunami in Indonesia, Hurricane Katrina, and the earthquake in Pakistan, I wondered what people do in case of natural disaster if they don't have electricity and a refrigerator. I wondered if I could make something to keep food or medicine cool, and if I could make it out of things we would have around the house. Hypothesis: The temperature in the inside pot will decrease as more water is evaporated. The pot with the sand and water will reach the lowest temperature. <b>Methods/Materials</b> Nine pots were assembled with an 8" outside terra cotta pot, 6" inside pot, annulus filled with soil or sand, beans, and a pot lid. Water was added to pots 4 through 9, and all pots were weighed. The pots were then placed in a dry sauna. The following measurements were noted every 45 minutes: sauna temperature, sauna humidity, and inside temperature of the 6 inch pots. After 3 hours, each pot was weighed again. The difference in weight showed the amount of evaporation that had occurred. The average amount of evaporation was compared to the average temperature in each group of pots. <b>Results</b> Average evaporation of 0.3 lbs of water from the wet soil pots resulted in an average temperature decrease of 6.6°F as compared to the dry sand pots. Average evaporation of 0.2 lbs of water from the wet sand pots resulted in an average temperature decrease of 4.0°F as compared to the dry sand pots. <b>Conclusions/Discussion</b> The experiment demonstrated that in a natural disaster people can use things around the house to cool food or medicine to help them last longer. Part 1 of my hypothesis was correct in that as evaporation increased, temperature decreased. Part 2 of my hypothesis was incorrect because soil, not the sand was more effective for evaporative cooling.	
<b>Summary Statement</b> My project is about using evaporative cooling and normal household items to cool medicine and food in a natural disaster without electricity.	
<b>Help Received</b> Seven Oaks Country Club for letting me use their sauna. My mother and father for helping me on the computer. My dogs for not knocking over my project.	