



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Robert G. Wright	Project Number S0816
Project Title Water, Water, Everywhere, but Not a Drop to Drink: Portable Desalination	
Abstract Objectives/Goals Objective: The purpose of this experiment was to determine the most efficient design for a portable, candle-powered desalination plant that would give people a way to make pure water from salt water using simple materials and only small amounts of thermal energy. It is postulated that altering the design (changing the structure of each plant) of a portable desalination plant will affect the rate at which it produces pure water from ocean water. The difference in the design will affect the rates of vaporization and condensation, thus affecting the rate of pure water production. Methods/Materials Materials and Methods: The materials used in this experiment were all easily obtainable and the designs of the systems were not complicated. Four designs were built. The first was a one-gallon paint can with a funnel (turned upside down) on top, which had a tube running from the spout to the graduated cylinder, which collected the pure water. The second was a one-quart paint can with a funnel (turned upside down) on top, which had a tube running from the spout to the graduated cylinder. The third was a baking pan with plexi-glass sides forming a greenhouse. U-shaped channels ran down both sides of the "greenhouse" and into pipes that drained into two graduated cylinders. The fourth design was a steel bucket with a plastic garbage can on top. Inside the top of the garbage can was an upside down cone. A pipe traveled through the can (which collected the water from the cone) and into the graduated cylinder. Results Results and Conclusions: This experiment showed that the "greenhouse" design was the best. It had the most, drainable surface area on which the condensation occurred. The amount of drainable surface area is a major factor in the efficiency and effectiveness of the desalination plant. Conclusions/Discussion See above.	
Summary Statement This project tested the effectiveness of different designs for a portable, candle-powered, desalination plant.	
Help Received Father provided some materials and minimal assistance during construction and testing.	