CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
J0618

Project Title
The Effect of a Cooler Condenser in Distilling Freshwater from Saltwater

Abstract

Objectives/Goals
The objective was to determine whether the temperature of the condensing surface in a distillation process affects the rate at which freshwater is produced from saltwater.

Methods/Materials
A distillation unit was placed on top of a pot of boiling saltwater. Another pot was placed on top of the unit, with the bottom of the top pot serving as the condensing surface. The freshwater produced in fifteen minutes was measured for three temperatures. First, the top pot was filled with tap water, and the temperature maintained by removing water and adding tap water. Second, the top pot was filled with ice and water, and the temperature maintained by removing water and adding ice. Third, the top pot was filled with tap water, and brought to a boil before the trial.

Results
The freshwater produced in fifteen minutes was an average of 344.3 milliliters with the condensing surface at the temperature of tap water, an average of 325 milliliters with the surface at the temperature of ice water, and an average of 73.3 milliliters with the surface at the temperature of water brought to a boil.

Conclusions/Discussion
My hypothesis was that a cooler condensing surface would produce more freshwater.

The data proved the hypothesis to be partially correct and partially incorrect. The production from the tap water temperature and ice water trials was much greater than the production from the hot water trials. However, the production from the tap water temperature trials was greater than the production from the ice water trials.

Summary Statement
My project is about whether the temperature of the condensing surface in a distillation process affects the rate at which freshwater is produced from saltwater.

Help Received
My Dad helped with the boiling water, and removing water from the pot.