



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Clara L. Wochholz	Project Number J1031
Project Title Would You Like a Glass of Ocean?	
Abstract Objectives/Goals The problem was to determine whether ocean water could be purified in an ecologically healthy and inexpensive way using a home built parabolic trough solar reflector. Methods/Materials I built a parabolic trough solar reflector using pvc pipe, copper pipe, solar reflective film, drip valve, copper male adaptor and fitting, PE tubing, pipe wrap insulation, black heat resistant spray paint, plastic container and lid, plastic fitting, glass thermometer, lumber, plywood, Nalgene bottle, paint bucket, wing nut & carriage bolts. Ocean water was collected, and on four days it was fed it into the device: the PE tubing with the drip valve ran the ocean water through the copper tubing to the rest of the trough, where it was heated to separate pure water from ocean water. Results At 15 minute intervals, saline waste and desalinated water samples were collected. Temperature data was measured for the saline waste, desalinated water, and immediate surroundings. Volume of saline waste and desalinated water was measured. Flow rate was calculated. An optical refractometer was used to measure samples. Parts per thousand (ppt) and refractive index (RI) of samples was obtained. Two of the four days of testing small droplets were produced. The outcome was <1 mL of clean water. Conclusions/Discussion The hypothesis was supported. During testing the temperature of the ocean water rose to a higher point than 50°C. This allowed for water to be purified, though only <1 mL separated from the ocean water, on two of the four dates of testing. This data suggests that people without an adequate clean water supply, who are located near the ocean, could use a low cost, portable, parabolic trough solar reflector to produce useable drinking water.	
Summary Statement Can ocean water be purified using a self-built parabolic trough solar reflector?	
Help Received Father purchased materials, supervised construction (for safety); Dave Sar helped me brainstorm and develop concept; Margaret Jameson let me conduct testing on her property; Mother help with application process and took photographs.	