According to the World Health Organization (WHO), between 2 million and 5 million people—many of them children in developing countries—die each year from diseases resulting from contaminated water. Your team has been hired by WHO to help solve this major world health crisis. Your challenge is to design the most efficient, inexpensive, portable solar cooker that will attain a temperature needed to pasteurize contaminated water and make it healthy to drink.

Procedure
1. Follow the steps on your “Invention Checklist” handout as you design, build, and test your solar cooker.
2. As you test your first design, use the “Temperature Data” handout to record your data. When you have finished testing your first design, plot your data on the graph supplied on your student handout.
3. Present your first cooker to the class and add your temperature data to the class chart. Each team will present its cooker and data results.
4. Choose a variable (or variables) to change on your design for your second model. Note on your original drawing what you changed and include a list of reasons why in your journal.
5. Test your second model and enter the new temperature data on the graph on which you plotted your first data set.

Questions
Write your answers on a separate sheet of paper.
1. Based on your data, was your first model or your redesigned model more efficient at heating the water?
2. What factors do you believe accounted for the differences in the efficiency of the two solar cooker designs?
3. List three variables that affect the time it takes to heat water in a solar cooker.
4. Draw a diagram to show how transmission, reflection, absorption, and insulation played a part in your solar cooker (depending on your type of cooker not all of these concepts may apply).
5. If you had to change one design element in your cooker to improve it for a subsequent test, what would it be? Why would you make the change?
6. Compare the use of the sun as an energy source to one of the following types of energy sources: wood, fossil fuels such as coal or oil, nuclear power, wind, or water.

Criteria for Success
The effectiveness of your cooker will be judged by
• its efficiency (pasteurizing water the fastest)
• its cost-effectiveness (uses inexpensive materials)
• its portability (can be easily transported from one place to another)