



Student Worksheet: Using Chemistry to Find Vents

Name: _____ Date: _____ Class: _____

Introduction

Hydrothermal vents are openings on the ocean floor from which heated, mineral-rich water emerges. Since these vents may be several thousand meters deep, finding new areas of hydrothermal vent activity can be quite challenging. In this lesson, you will explore, investigate, and answer a question based on a hydrothermal vent phenomenon.

Experience the Phenomenon

Fill in the chart below as you watch the *Oases of Life* video clip.

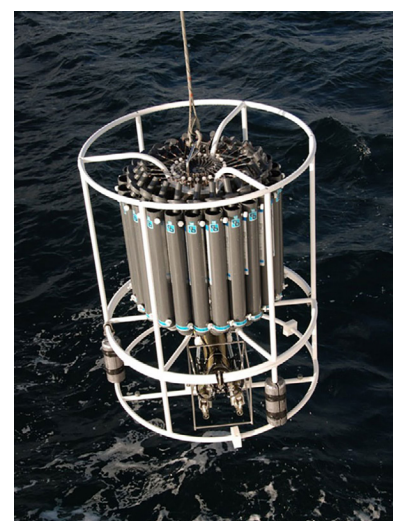
I Notice	I Wonder	It Reminds Me Of

Investigate

The primary function of a **C**onductivity, **T**emperature and **D**epth profiler, or **CTD**, is to detect how the conductivity (an indirect measurement of salinity or amount of “salt” in the water) and temperature of the water column changes with depth. Often, CTDs are attached to a large metal frame called a rosette, which may hold water-sampling bottles used to collect water at different depths. The rosette may also carry other sensors that can measure additional physical or chemical properties.

In order to answer the **Driving Question**: *How do physical and chemical cues help scientists locate hydrothermal vents and other unique deep seafloor habitats?*, you will conduct an investigation that simulates an analysis of water samples collected in the water column by a CTD. You will determine whether any of the samples suggest they might have been collected near a hydrothermal vent and then explain your claim using supporting evidence.

Work together to test each of the six water samples using the pH strips (use one strip per cup) and a thermometer to model testing physical and chemical parameters. Record your data on the table below and then graph your results.



SAFETY FIRST: Handle all hot containers with care. Wear safety glasses and gloves during all the testing.





Put the Pieces Together

1. Based on your graph, where would you look for a vent? Explain how the evidence supports your claim.

2. On your dry erase boards or chart paper, draw out a model of how your data could indicate the presence of a hydrothermal vent. Your drawing should include: a ship and CTD sampling the water, all data points A-F collected, the location in the water column where these samples could have been collected, and a vent (draw where you think it could be located based on your data.)
3. Revise your model based on the additional information provided in the video. Draw your revised model below. Remember to include all the labels mentioned above.