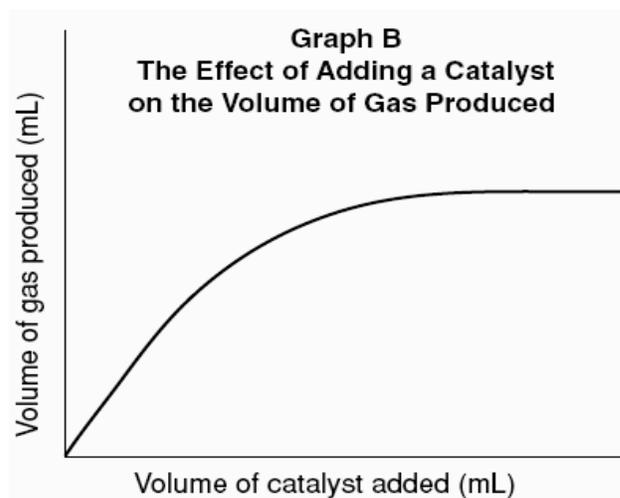
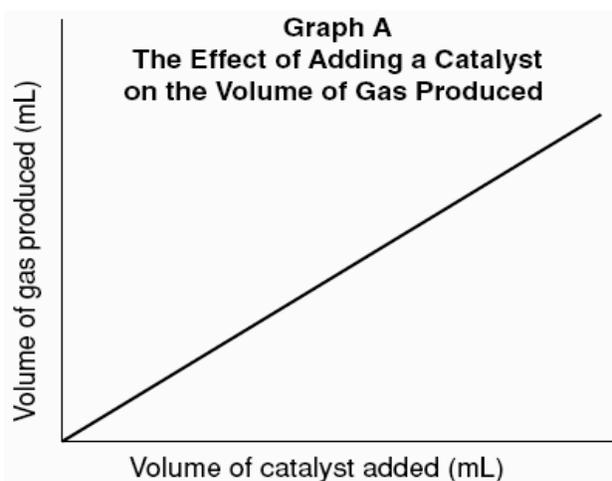


## Investigation 11.A: The Effect of a Catalyst on the Decomposition of Hydrogen Peroxide, $\text{H}_2\text{O}_2(\text{aq})$

### Answer Key

#### Answers to Analysis Questions

- The addition of a catalyst increased the volume of gas produced (or increased the drop in mass). With increasing amount of catalyst added, the amount of gas produced in the time allotted increased; that is, the rate of reaction increased with increasing amount of catalyst. Since the gas produced (or mass change) was measured after a specific amount of time, this translates into an increase in reaction rate.
- Your graph should have volume of catalyst on the  $x$ -axis and volume of gas (or change in mass) on the  $y$ -axis. You should see that adding a catalyst will increase the amount of gas produced in a specific amount of time. If you perform trials with varying amounts of catalyst, you should see that the more catalyst that is added, the more gas will be produced (graph A). If you continue to add more catalyst, eventually you will likely obtain a graph similar to graph B. At some point, enough catalyst will be added that the reaction likely will be complete within the time allowed and subsequent trials with even more catalyst will not have an effect on the volume of gas produced.



- You should try this experiment using a wider variety of volume of catalyst. You could also repeat the experiment using a different catalyst.

#### Answer to Conclusion Question

- Iodide increases the rate of decomposition of hydrogen peroxide. This is measured as an increase in the volume of gas produced (or a greater decrease in the mass) in a specific period of time.

#### Answer to Application Question

- The  $\Delta H$  should not be affected by the use of other catalysts as  $\Delta H$  is not affected by the presence of any catalyst.