Lab – Boiling Point Elevation

Background: The freezing point of water is 0°C. If we add a solute to the water, the freezing point will decrease. This is called freezing point depression. The boiling point of pure water is 100°C. If we add a solute to the water, the boiling point will change. The purpose of this lab is to find out what type of change occurs!

Hypothesis:

Materials: Bunson Burner, 2 Beakers, Salt, Tongs, 2 Thermometers, 2 Clamps, Goggles, Stirrer, Ring Stand

Procedure:

1. Add 250 mL of tap water to each beaker.
2. Add 20 g of salt to one of the beakers and stir until you have a saltwater solution.
3. Heat the saltwater and record the temperature every minute on the Data Table. Once the water begins to boil, continue to record the temperature for the remainder of time.
4. Using the tongs, carefully remove the beaker.
5. Using the beaker of just water, repeat steps 3 and 4.
6. Graph the numbers from the data table.

Data Table:

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| Time(min.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Saltwater (Temp.°C) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tap Water  (Temp.°C) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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Analyze and Conclude:

1. What was the boiling point of tap water? Saltwater? Label the boiling points on your graph.
2. What is a variable? What was the variable in this experiment?
3. What is a control? What were the controls in this experiment?
4. What is the purpose of a control in our experiment?
5. What happened to the temperature of the tap water and saltwater once the boiling point was reached?
6. We kept applying heat once the boiling point was reached. What happened to the heat that was being added?
7. Was your hypothesis correct? *Explain*.