Name:

Date:

School:

Facilitator:

7.02 Detecting Poison (50 Points)

**Using the Spectrometry Virtual Lab linked on the Task page to complete this activity.**

# Part 1: Prelab

**Answer the questions below using complete sentences.**

1. Explain how a spectrometer works. (3 points)

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| --- |
| *Write your response below:* |
|  |

1. Why do different sports drinks produce different absorbance spectra? (3 points)

|  |
| --- |
| *Write your response below:* |
|  |

1. Why do we need to test distilled water and a copper sulfate solution in addition to the sports drinks? (4 points)

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| --- |
| *Write your response below:* |
|  |

# ****Part 2: Data****

**Complete the table below for the absorbance spectra in the lab.** (25 points—1 point per cell)

| **Substance** | **Peak locations (in nm)** | **Peak absorbance values** | **Minimum value locations (in nm)** | **Minimum absorbance values** | **Description of absorbance spectra** |
| --- | --- | --- | --- | --- | --- |
| **Copper sulfate** |  |  |  |  |  |
| **BluBlast** |  |  |  |  |  |
| **Lightning Power** |  |  |  |  |  |
| **Mountain River** |  |  |  |  |  |
| **Tainted drink** |  |  |  |  |  |

# Part 3: Analysis

**Answer the following questions in complete sentences.** (3 points each)

1. Did the tainted student drink show the presence of copper sulfate? Justify your answer using specific evidence from the lab.

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| --- |
| *Write your response below:* |
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1. Which sports drink was in the tainted student drink? Justify your answer using specific evidence from the lab.

|  |
| --- |
| *Write your response below:* |
|  |

1. Why did we need to measure absorbance spectra of the unopened drink and copper sulfate? How does that support the investigation?

|  |
| --- |
| *Write your response below:* |
|  |

1. What difference did you see between the absorbance spectra of the student drink and the unopened sports drink (besides copper sulfate, if present)? Can you explain this difference?

|  |
| --- |
| *Write your response below:* |
|  |

1. Imagine that a chaperone watered down the sports drinks to make them last longer. How would that impact the absorbance spectrum of the drink?

|  |
| --- |
| *Write your response below:* |
|  |