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| outhern River College | **Year 11 Earth and Environmental Science**  **Task 10: Eutrophication lab** |

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| **Name:** | **Due Date:** | **Score: / 37** |

**Introduction**

Despite efforts to treat wastewater from industry and domestic use, eutrophication is a leading cause of water pollution for many ecosystems. In this investigation you will explore the effect of small quantities of fertilizer on algal growth. You need to select appropriate measurements for your algae and quantities of fertilizer. Note that very small amounts of fertilizer may have large effects. If in doubt, start with a very low concentration, such as 1 mL of soluble fertilizer solution in 500 mL of water.

**Aim**

To document the effect of fertilisers on algae or floating water plants (eg. Duckweed)

**Hypothesis**

Write a suitable hypothesis for this experiment **(1 mark)**

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**Materials**

Complete a material list for this investigation below. Include quantities for full marks. **(4 marks)**

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**Risks**

What are some of the risks associated with conducting this experiment? The first one has been done for you **(4 marks)**

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| What are the risks in doing this investigation | How can you manage these risks to stay safe? |
| *Unknown species of algae or water plants may release toxins and/or be growing in pathogen-rich water* | *Use gloves when collecting samples from local waterways. Wash hands after handling both algae and pond water.* |
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**Method**

Construct a method to investigate the effect of fertilisers. Be sure to include:

* A control group
* At least three different fertilizer concentrations
* A standard quantity of algae at the end of your experiment
* A method to quantify the amount of algae such as weighing at the end of the experiment. **(5 marks)**

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**Results**

Record your results in the table below **(4 marks)**

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| Concentration of fertiliser | Initial weight | Final weight |
| 0 g/L |  |  |
| 1 g/L |  |  |
| 3 g/L |  |  |
| 5 g/L |  |  |

Create a line graph below to show the fertilizer concentration vs algal growth **(5 marks)**

**Discussion**

1. Discuss your results and the effect of fertilizer concentration on growth **(3 marks)**

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2. Were there any unexpected results or errors in the collection of data? Discuss **(2 marks)**

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3. Too much fertilizer will cause algal death. How did your results align with this statement? **(2 marks)**

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4. Discuss the effect of algal growth on an aquatic ecosystem **(3 marks)**

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5. What are some of the ways in which we can reduce the occurrence of algal blooms. Please explain **2 methods. (4 marks)**

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