

# AP Environmental Science Formal Lab Report Guidelines

## General Information

All formal lab reports follow the same classical organization and format. They should be typed or neatly written using double spacing. Every section of the report should be written in full sentences with the exception of the “Materials” section. Write in the passive voice, no first person “I” or “we” except in the analysis. (Example: *Four test tubes were assembled in a test tube rack. To each tube, 4 ml of H<sub>2</sub>O was added.*)

Organize your report according to the following sections:

### I. Title

This is your cover page.

### II. Purpose

This is a simple statement of the purpose of the lab or the problem being solved.

### III. Background

While you should assume your audience has some knowledge of the report topic, the main purpose of this section is to give the reader the necessary understanding of the experiment so that they can interpret your results. A second vital purpose is to include any known facts from past research, so that you can refer to these in your analysis. You may include graphics for clarity. All the information you learned from someone else needs to be “cited” in the introduction. (refer to *Citing Scientific References*)

### IV. Hypothesis

Make an “if . . . then” statement of what you expect to occur in the experiment. What is the effect of the independent variable on the dependent variable? (Example: *If \_\_\_\_\_ variable is adjusted, then \_\_\_\_\_ should happen to the experimental data.*)

### V. Materials

This can be a list, but be sure to include **all** materials used in your experiment.

### VI. Methods

Procedures should always be presented clearly, so that a person who has not done the activity can duplicate the activity *exactly*. All steps should be numbered and a line skipped between steps for clarity. Include diagrams of your set-up if it helps understanding.

### VII. Data

The best way to report this is a data table. Always use the proper units! You should also make sure that you are recording both qualitative as well as quantitative data. Try to use

graphs and charts to explain your data. Remember that on graphs, the independent variable goes on the x-axis and the dependent variable goes on the y-axis. A *good* data table or graph can be taken completely out of the context of the lab report and still be properly interpreted. Written observations must also be included, describing what was *objectively* observed. Any anomalies during the running of the experiment should also be recorded.

### **VIII. Analysis**

This is the heart and soul of your report. This is the *ONLY* place in the report where you should be interpreting your results. First, summarize the data from tables and graphs in words to validate your arguments. This does not mean a parrot-like recitation of all the data when you've already given it in a table. It means.....look for trends in the data from your experiment, and refer to your actual data numbers to present interpretations and to explain what the data means. Take the raw data, perform calculations, and use that to underscore trends.

After you've summarized the data, decide which errors are relevant to your experiment and which were so large as to potentially invalidate your work. (*No lab is without error!!*) How might your observations have affected your results? Analyze *why* you got the results you did.....*Be scientific! Think!!!* This is your chance to show you understood the experiment. If there are ways to improve your work, mention them here.

### **IX. Conclusion**

This section can be fairly short and can respond to the purpose of doing the lab. Make sure to include whether your hypothesis was valid or invalid. Avoid “wordy” phrases that are unnecessary and do not add to the report.

### **X. What Did You Learn from the Experiment?**

Write a short paragraph explaining what you learned from the experiment as it relates to AP Environmental Science.

### **XI. Literature Cited**

It is up to you to select the most useful references. All references cited in your report must appear in the literature cited section. (refer to *Citing Scientific References*)

Credit: Anne Maben, AP Science Coach, Los Angeles County Office of Education