

AP ENVIRONMENTAL SCIENCE LAB REPORT FORMAT

Whenever you are writing a formal lab report, this format is your default format. Sometimes there will be additional expectations that attend an individual assignment. This report is to be written in sections as indicated below using the language forms indicated.

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General Comments:

- All final reports must be typed (except for the recording of raw data).
- Raw data and observations must be recorded as neatly as possible in blue/black ink when you are doing lab work. If you type your data later for the final report, attach the raw data and observations recorded in lab as an addendum. If you record a number in error, mark through it with 1 line (no erasures or whiteout).
- Include chemical reactions in the report, where applicable.
- Do not write in 1st person singular (don't use 'I', 'we', 'he', etc... Example of an appropriate statement: The acid was added to the beaker.)
- In your reports, be sure to give references as needed
- Heading of first page: write NAME, DATE, CLASS and list the members in your group.

FORMAT:

I. TITLE (descriptive)

II. BACKGROUND OR INTRODUCTION

- Explains observations, information given in class, and previous information that led you to your question. You may include reasons for raising the question. If you changed the question during the course of the experiment, because of what happened or failed to happen, discuss the shift in this section. Write this section in *paragraph* form.

III. QUESTION

- Write your question in its final form. Use the *interrogative form* (indicating you are asking a question)

III. HYPOTHESIS

- Explain how what you knew led you to your experimental design. Explain your assumptions and reasoning but not the details of your steps. Specifically describe the factors that are to be controlled. Describe what you will watch, measure and use as your criterion. Describe independent and dependent variables. If there was a shift of questions discussed above, your hypothesis is to speak to the hypothesis that goes with your final question. Conclude your discussion of the hypothesis with a conditional statement of your working hypothesis ("If..., then..." statement relating independent and dependent variables)

IV. MATERIALS

- List all materials (*not in sentence format, a list is fine*)

V. PROCEDURES

- Describe the steps that you took as a set of numbered *statements*. Explain adjustments that you made and the conditions that prompted these adjustments. Make your description sufficiently clear that I could repeat your experiment and get the same results that you got.
- Be certain to include quantities, dimensions, and other measurements that would be helpful to a person trying to repeat your results.
- Procedural steps should be numbered and make use of an *economy of words*.
- Note any safety concerns.

- Specifically describe the factors that needed to be controlled including how control was achieved. What factors did you monitor? If this is well covered in your hypothesis or background, do not repeat yourself.
- Draw a diagram of the experimental *plan* and refer to the diagram in your description.

VI. RESULTS

- Consists of 2 parts: (label & write each individually)

(a) Data Collection & Presentation:

- Data collected may be quantitative or qualitative
- Express the raw data by using a *data chart*. Be careful to report only what was observed (even if unexpected), expressing the observation in measurable terms.
- Data tables should be properly formatted with title, labels on columns and rows, and units.
- Record uncertainties in your measurements
- Attach raw data to end of report (state that there is an attachment in your report)

(b) Data Processing & Presentation:

- Show the transformations of this raw data that you used to bring meaning to your observations.
- To assist you in your interpretation, you may want to process your data by finding averages, % changes, rates, ranges, or medians or modes to see if any patterns pop out.
- If the data can be expressed in the form of a graph, do so. Diagrams may be used. All graphs, tables, etc. should be clearly labeled (axes, title, units), points should be clearly plotted; graphs may be neatly hand drawn on graph paper, but I highly recommend you do them on Excel
- Calculations and other transformations should be placed in your paper in an easy to follow manner *according to the style requirements of the transformations* you have chosen. Show at least one sample calculation of each type
- Make comparisons, note trends

VII. CONCLUSIONS

- Discuss how your results answer the question *in terms of your hypothesis*.
- Discuss sources of error and the limitations of your conclusions. Resolve any alterations in the question or hypothesis sections. In this section you are evaluating your data and its interpretation. Write this section in *paragraph* form.
- Where applicable, compare experimentally determined results with literature value; note reference
- Where applicable, calculate % error

VIII. EVALUATION

- Review and evaluate the procedures you used. Explain how the procedure was successful as well as how the procedures may have led to error. Suggest modifications to the design of the procedure that would have led to more reliable results and greater validity of conclusions. Write this section in *paragraph* form.

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