Handout 2, Part 1: How to Write a Purpose

Every lab (when appropriate-see weekly pre-lab sheet) will have a purpose, an introduction, a procedure section, a data section, a calculation section, a results section, and an evaluation section. The goal of this hand out is to help you formulate an acceptable **PURPOSE .**

First, lets look at the purpose. The purpose should explain what will accomplish by doing the lab. The purpose should be written in such a way that the person reading the lab report has a clear idea of the concepts being explored by doing this lab. The purpose should be specific. It is usually in the form of a statement like, 'I will determine the difference in ink between three colored pens using paper chromatography', or a question like 'How many licks does it take to get to the center of a Tootsie Pop?'.

We will use "Experiment 1: Use of Common Lab Equipment, and Determining Significant Figures in Equipment", to explore how to format and write a lab, and look at other labs on the website. From the title, we can infer that the lab has something to do with laboratory equipment and error. The purpose should reflect the title of the lab. Reading each part of the lab and the pre-lab **BEFORE** you start writing in your lab book will help with this process. Then ask yourself, "What am I determining for this part of the lab? What am I ultimately trying to determine or explore in this lab?" In the course of reading the lab, you will have to get at the essences of the lab.

For example, in 'Experiment 2: Metric Measurement', Parts 1, 2 & 3 have the student (you) determine the mass and the volume of a piece of aluminum by two methods. You will use that information to determine the density of aluminum. Parts 1, 2 & 3 are important but do not belong in the purpose. The purpose should not contain intermediate information, like, 'I will learn how to use a balance', or 'I will learn how to use calipers.' The purpose should reflect what you will calculate and determine through observations.

Sometimes, the first paragraph in the experiment contains the purpose. The paragraph sentence of the introduction to Experiment 1, starts with…

> "Measuring the volume of liquids and the mass of matter are two important components of many experiments. In this lab, we will practice using centigram (top loading) balances, and analytical balances. We will distinguish between different types of glassware used in the lab. We will practice using this glassware, and we will use volumetric ware to determine the average density of water without graphing. We will determine significant figures for specific tools. All measurements have some degree of uncertainty.[1] Uncertainty represents doubt in the measurement. It is the part of the measurement of which we are not sure."

A student would summarize this to : 'In this lab I will determine the unknown mass a sample of aluminum and a sample of sodium chloride using an analytical and a top-loading balance. I will also determine the density of water at room temperature using a 25-mL graduated cylinder and a centigram balance. I will also determine the average boiling point and freezing point at a room temperature and pressure for water using three alcohol-centigram thermometers. Since all measurements contain error, significant figures and simple error calculations will be explored. ' The previous sentences can also be posed as a question or series of questions: 'What is the average density of water at room temperature? What are the average boiling point and freezing point of water using an alcohol thermometer at room pressure? How do I determine the significant figures, precision, and accuracy of a measurement or tool?'

Notice that it is very clear what we are looking for when we do the lab. You are doing the lab to answer the question posed in the purpose.

As a guideline, most purposes are about 50-100 words.

[1] Bell, Stephanie, A beginner's Guide to uncertainty of Measurement, NPL No. 11, Crown Copyright 1999. Issue 2 with amendments March 2001