

## **Problems encountered in the correction of Planning Lab: Number of Molecules in a given compound**

### **Major Points of concern:**

- Many labs were missing sections including introduction, hypothesis and variables
- MSDS should include how to handle, how to dispose, hazardous effects
- Calculations belong in the Data Processing Section. Explanations can be given there as well.
- Independent Variables were often incorrectly identified. The independent variables were mass of sample and molar mass of chemical. Type of chemical is unacceptable.
- Dependent variable was sometimes confused with controlled variables.
- Many students failed to identify more than two controlled variables. In addition, some controlled variables given were irrelevant (eg accuracy of scale)
- All labs should be written in formal language, third-person past tense is preferable. "I believe" is unacceptable.
- The majority of labs contained a design flaw in which the mass of an empty container was assumed to be equal to the mass of a filled container. Containers cannot be considered identical in this setting.
- The precision of measurement apparatuses must be given in the apparatus section.
- Hypotheses are supposed to predict the relationship between the independent and dependent variables, with reasons for the relationship being given. Explanations of why variables are being tested or measured in a certain way may be included in a separate Design or Methodology section.
- Sections must be explicitly separated.
- When a lab is submitted, it is assumed that the experiment has been completed. Thus, unknown chemical is unacceptable as material unless the identity of the compound is kept secret even after the experiment.
- Many labs lacked formal evaluation of the procedure (unclear as to whether this was expected or not).

### **Minor Points of concern:**

- Distinguish between proper usage of "chemical", "substance", "sample" and "specie". Chemical was often used incorrectly in lieu of one of these words.
- Step 1 should always be construct appropriate tables for quantitative and qualitative observations.
- Specify what observations are being recorded, e.g. qualitative observations of chemical, mass of sample.

Marks should not be considered commensurate with expectations; class averages were inflated 10-20 percentage points.