Addendum to the
"Atomic Spectrometric Determination of Sodium in Snack Foods" Experiment
Spring 2021

I. Modification of Sample Preparation Procedure
The stated purpose of the experiment is to determine the percent sodium in a snack food by first decomposing the solids in the sample to produce a homogeneous sample solution. This is normally done by making a slurry by adding water to a measured mass of snack food and blending the mixture before determining the total mass of the resulting slurry. Triplicate samples of a measured mass of the slurry are then mixed with concentrated nitric acid and hydrogen peroxide and heated under pressure in a microwave vessel to decompose organic material and produce three homogeneous solutions. These digests are then diluted carefully before analysis.

Unfortunately our microwave decomposition system is not functioning so we will be unable to do the decomposition step. Instead, I have prepared "unknown" solutions that are representative of the solution you would have once the decomposition is complete. So, instead of selecting a snack food sample and preparing three digested samples from it, you will instead be given three vials containing "pre-digested" samples. *You will assume that each of these samples were prepared by transferring 2.50 grams of the snack food slurry described in the table below into microwave vessels, adding 5.0 mL of concentrated HNO_3 and 2 mL of 30% H_2O_2 and digesting in the microwave.* You will pick up the procedure by quantitatively transferring the contents of your vials into three pre-weighed plastic bottles, as described in the second paragraph on the section **2. Sample Decomposition** on page three of the lab procedure. After completing your analysis, you will use your results to report the average percent sodium by mass in the original snack food.

> **Table 1: Composition of Snack Food Slurry**
> **Snack Food:** Gardetto's Original Recipe
> **Sodium content from label:** 470 mg Na per 49 gram serving size.
> **Mass of sample used:** 52.72 g
> **Total mass of slurry:** 522.91 g

II. Clarification of preparation of spiked sample from section "3. Analysis of Sodium in the Decomposed Chip"
The purpose of the spiked sample is to help assess accuracy and evaluate the presence of matrix issues. The idea is that if our calibration is accurate, when we measure an unspiked unknown sample and then measure a sample with a known concentration of analyte added to the unknown and calculate the difference in concentration using our calibration curve, the difference in calculated concentration should match the difference in the prepared concentrations of our solutions. In diluting your samples, you have performed your dilutions so that the Na concentration in your unknown is about 1.0 μg/g (based on the snack food label information). For the spike solution, the goal is to prepare a solution that contains approximately 1.5 μg/g of sodium, with about 1.0 μg/g coming from your sample and approximately 0.5 μg/g coming from a standard. So, you will begin to prepare the spiked solution exactly as you did your ~1.0 μg/g unknown solution, but before diluting to a final mass, you will add an appropriate amount of a standard Na solution so that the final concentration after dilution should be 1.5 μg/g instead of 1.0 μg/g. Note that the 0.5 μg/g concentration change is a suggestion, it doesn't have to be exactly 0.5 μg/g, as long as you know the concentration that was added.