Podcast Script – Gas Stoichiometry.

Hello,

This podcast comes to you today from Dhahran, Saudi Arabia, sponsored by Scramling Science. Today’s topic is gas stoichiometry.

A large part of the syllabus in the first year chemistry class is dealing with stoichiometry. It is then reviewed earlier in the AP year. You have already done several problems that include gases already, so it is clear that there is no difference between the problems with gases and the problems without gases. They work the same way. All stoichiometry problems require that the amounts are measured in moles. So now instead of being limited to a gram to mole conversion, or a concentration of a solution, we can use gas data to determine moles, specifically using the Ideal Gas Laws. The actual work of the stoichiometry problem remains unchanged from your previous work on the topic. You still need a mole ratio and the ways to solve for limiting reagent and amount in excess remain unchanged.

The types of problems we see with gas stoichiometry often ask for Density or Formula Weight.

Density = mass / volume and you will undoubtedly be given the mass of the gas sample. You will then be given enough to solve for the volume. Sometimes people prefer to simply memorize another formula, which is fine, if that is something you want to do. Formula Wt. = density x R x T / Pressure

If you are given the density, recall that density is an intensive property and doesn’t change due to the amount of the material. Therefore, we can use a convenient amount, which is normally 1 liter of volume. This then tells us the amount of material in the problem. So if we are talking about a gas with a density of 1**.**25 g / L If we use one liter of gas as the volume, we know we will have 1**.**25 grams of the gas.

Perhaps the easiest way to solve these types of problems is to remember two formulas that have been taken previously and should be well known by now. The first is moles = grams / Molecular Weight or n = g / m and the other is the density formula which is Density = mass / volume which will usually be grams over either Liters or milliliters.

Then it is a simple matter of practice to see the different types of problems that can be thrown your way.

I hope you enjoyed today’s Podcast and found it entertaining and educational, and helped you with your understanding of Gas Stoichiometry. Remember that you can get more information on this topic from the class website or you can always send me a note on either FaceBook or via email. Refer back to this topic when needed, courtesy of Scramling Science.