**Homework 5 - Toxicology**

**Questions: Note to instructor: Below is a list of questions that are suitable for a homework assignment. You may select any number of question that you may feel is best suited for your class. This serves a guide and additional questions are welcome.**

1. **What is the difference between a toxin and a toxic agent?**
2. **What is the LD50 of caffeine? Is there a beneficial dose for caffeine? And, is there an adverse effect dose (besides the lethal dose)? You may have to do some research to find this information – remember to check your sources and ensure you are gathering information from a credible source.**
3. **Have a look at the following web link:** [**https://www.caffeineinformer.com/death-by-caffeine**](https://www.caffeineinformer.com/death-by-caffeine)**. Calculate how many cups of your favorite caffeinated beverage might give you a lethal effect.**
4. **An individual is exposed to a compound one a day for 5 days. On days 1, 2, 3 and 4 they exhibit no physical response, but on the 5th day they show symptoms of a toxicological response. Explain what is going using dose-response curves.**
5. **What is the difference between a NOAEL and LOAEL?**

**Toxicokinetics Questions: These questions related to the chemical and physical properties of chemicals as they are absorbed, distributed, metabolized, and excreted (ADME) from the body. Chemicals with certain chemical and physical properties will be more readily absorbed and distributed therefore causing a toxic effect. This will help us to think about how we might apply these general rules to the design of molecules that have reduced impact within our bodies.**

1. **How does lipophilicity affect the absorption of a molecule into the body?**
2. **What are the primary chemical and physical properties that will affect whether or not a molecule is absorbed by inhalation?**
3. **Why do chemists prefer to manipulate toxicokinetics parameters rather than toxicodynamics parameters to change the toxicity of the molecule?**

