Introduction to Toxicology Lecture Plan

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Subject:	Toxicology
Time Available	60 minutes
Learning Aids Required	Laptop or computer, LCD projector, White Board, Markers and Eraser
Size of Group	20-40
Objective	At the end of the lecture, the students will be able to: ♦ **describe** how the field of toxicology has changed over the years ♦ **explain** how toxic chemicals are classified and the complexities of the dose response concept ♦ **explain** how the similarities and differences between toxicants like alcohol and BPA ♦ **apply** the principals of toxicology to evaluate the potential health effects of common chemicals
Background	College level for students with an interest and/or background.
Means of Assessment	Discussion questions during the lecture and applying the lecture information to a blog post
Guidance	♦ Color key: Use red or blue for points that are be emphasized ♦ Time - estimate how many minutes will be needed for each part of the content ♦ Content - provide introduction, development of content, and summary

Time	Details of Content	Questions
5 minutes	♦ Describe the historical progression of the discipline of Toxicology from a reactive to proactive science. ♦ Link potential job opportunities with the mechanistic, clinical, forensic, environmental, and regulatory toxicology to stimulate student interest ♦ Link green chemistry to the proactive approach to minimize the health risks of chemicals	Considering what you have learned about toxicology, why so we have a history and current concerns about chemical exposure in everyday life?
20 min	♦ Describe the concept of dose response and how the types of toxicants have different dose response properties (toxins, carcinogens, mutagens, teratogens, and endocrine disruptors) ♦ Describe the concepts of chronic and acute toxicity and identify how toxicant properties influence the response by suing dose response curves ♦ Discuss endocrine disruptors and use tamoxifen as an example ♦ Illustrate the importance of population and timing on the effects of toxicants	Ask the students how alcohol and lead would be classified with respect to the concepts discussed in this section. These chemicals will be discussed as case studies in the next section.

10 minutes	♦ Case Study Alcohol – Discuss properties, potency, and fetal alcohol syndrome. ♦ Link the progression of human development to toxicant exposure.	Should alcohol be regulated as a teratogen?
10 minutes	♦ Discuss history of lead exposure and toxicology. ♦ Link lead exposure to human development and emphasize fetal and early childhood issues. ♦ Discuss societal impacts of lead exposure.	What should be done with lead in urban USA?
10 minutes	♦ Discuss the role of green chemistry in toxicology. Introduce the concept of minimizing risk vs hazard. ♦ Discuss the importance of molecular structure and how we can screen chemicals for potential problems based on structure and biochemical and cellular assays. ♦ Like these concepts to the toxicology of BAP.	Given this information, what chemicals are the students most concerned about?
5 minutes	♦ Review and discussion of student's role.	
Assignment: Have the students read America's Real Criminal Element: Lead (http://www.motherjones.com/environment/2013/01/lead-crime-link-gasoline) and write a blog post on their reaction to the information and discuss what should be done. Discuss the blog posts in the next class.		