

Kearny High School- APES Study Guide

Health, Risk, and Toxicology

This unit includes the effects environmental hazards have on human health, as well as on the health of the environment, and an examination of the risks we face in our environment.

Textbook Reference:

Botkin & Keller, *Environmental Science*, Chapter 10

Chapter #10- PowerPoint (*Lecture & Notes*)

Barron's: How to Prepare for the APES Exam- Chapter #10

Outside Reading/Viewing:

The Love Canal- Case Study

"Tuna for Lunch"- A Case Study about Mercury

Movie- "Erin Brockovich"

Activities/Labs:

LD-50 Lab (*Brine Shrimp*)

Nicotine Toxicity Lab (*Black worms*)

Salinity Lab (*Lettuce Seeds*)

Radiation Lab (*Irradiated Seeds*)

APES Internet Activity- "*Toxins in Your Neighborhood*"

APES- **Toxicology Problem Set-** www.biology.arizona.edu/chh

Toxin Research Assignment

Calculating Your LD-50 Activity

<i>toxicology</i> <i>toxicity</i> <i>point source</i> <i>area (non-point) source</i> <i>mobile source</i> <i>heavy metals</i> <i>bioaccumulation</i> <i>biomagnification</i> <i>body burden</i> <i>hazardous chemicals</i> <i>organic compounds (POP's)</i> <i>synergism</i>	<i>acute effects (exposure)</i> <i>chronic effects (exposure)</i> <i>thermal pollution</i> <i>toxic</i> <i>dose</i> <i>risk</i> <i>societal risk</i> <i>mutagens</i> <i>teratogens</i> <i>carcinogens</i> <i>pathogens</i> <i>radon</i>	<i>dose-response curve</i> <i>LD-50</i> <i>ED-50</i> <i>threshold concentration</i> <i>epidemiology</i> <i>noise pollution</i> <i>thermal pollution</i> <i>endocrine system</i> <i>immune system</i> <i>ionizing radiation</i> <i>risk assessment/management</i>
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Study Guide Questions (SGQs):

1. **Describe ten risks you take in your everyday life.** Differentiate between risks over which you have control and risks over which you have no control. Considering the area in which you live, include three risks you are you exposed to from your natural environment.
2. **Explain the mechanism of biomagnification.** Identify and describe the characteristics that cause some pollutants to pose a greater threat than others.
3. Distinguish between **transmissible and nontransmissible diseases**. List the six deadliest infectious diseases and identify the **most common vector** (*how it is transmitted: example: mosquitoes*) for each infectious transmissible disease.
4. The use of the pesticide DDT is an example of the conflict between benefit to humans and ecological damage. **List some of the benefits and some of the damage that result from the use of DDT.** Identify and describe the properties of DDT that led to unexpected damage. **Write one argument in favor of a worldwide ban of DDT. Write one argument opposed to a worldwide ban of DDT.**
5. During the time of Emperor Augustus of Rome, the plumbing pipes, which carried drinking water to the aristocracy, were made of lead, while the drinking water pipes of poor people were made of cheaper ceramic. **Speculate on how this fact contributed to the fall of Rome.**
6. **List three chemicals** in your home, which would have an LD_{50} . *Research to find if there is a substitute chemical that could be used that does not have an LD_{50}*
7. *Understand the events and consequences of the Love Canal Case Study and the events of PG & E (Erin Brockovich and PG &E)*
8. Be able identify **3-5 laws/acts** that protect citizens from toxicity (*ie- Clean Water Act*). Know what the act/law says and when it was enacted.
9. Be able to correctly graph/label and interpret an **LD-50 graph**.
10. Be able to correct identify and apply the **vocabulary** in the box on the previous page.
11. Know the health/environmental affects of a **major toxin (Lead, Mercury)** and be able to explain how it gets into the environment/ bodies and why it is so harmful.