**Human Health and Environmental Risks**

**Chapter 17 – Reading Motivator**

**From the AP Environmental Test Topic Outline:**

VI. Impacts on the Environment and Human Health

1 . Hazards to human health

(Environmental risk analysis; acute and chronic effects; dose-response relationships; air pollutants; smoking and other risks)

2 . Hazardous chemicals in the environment

(Types of hazardous waste; treatment/disposal of hazardous waste; cleanup of contaminated sites; biomagnification;

relevant laws)

**Human Health is Affected by a Number of Factors** (pages 464-466)

1. What are the 3 leading causes of death in the world?
2. What are the main pathogens which transmit infectious diseases worldwide?
3. Explain the difference between a chronic disease and an acute disease.

**Infectious Diseases Have Killed Large Numbers of People** (pages 466-471)

1. Complete the following chart regarding major infectious diseases:

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Description/Symptoms?**  **Chronic or Acute?** | **How Does it Spread? Where in the world is it a problem?** | **How can it be fought? How successful have we been?** |
| Plague |  |  |  |
| Malaria |  |  |  |
| Tuberculosis |  |  |  |
| HIV/AIDS |  |  |  |
| Ebola Fever |  |  |  |
| Mad Cow |  |  |  |
| Bird Flu |  |  |  |
| West Nile Virus |  |  |  |

**Toxicology – the Study of Chemical Risks (pages 471-474**

1. Complete the following chart regarding the major types of harmful chemicals to humans:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Description** | **Sources** | **Effects** |
| **Neurotoxins** |  |  |  |
| **Carcinogens** |  |  |  |
| **Teratogens** |  |  |  |
| **Allergens** |  |  |  |
| **Endocrine disruptors** |  |  |  |

**Scientists Can Determine the Concentrations of Chemicals that Harm** Organisms (pages 474-479)

1. What does a dose-response study try to determine?
2. What does the LD50 indicate for a given substance?
3. Explain the difference between an acute study and a chronic study.
4. What is the difference between a retrospective study and a prospective study?
5. What are the main routes of exposure to harmful chemicals that humans face?
6. Explain how biomagnifications occurs when a harmful chemical is present in low concentrations in ambient conditions.

**Risk Analysis Helps Us Assess, Accept, and Manage Risk** (pages 479-484)

1. Rank the following in order of how great the **risk of death** is (*figure 17.23*):
   1. Fire or smoke inhalation
   2. Airplane accident
   3. Cancer
   4. Firearm assault (shooting victim)
   5. Earthquake
   6. Falling
   7. Heart Disease
   8. Drowning
   9. Struck by a vehicle while walking
   10. Car crash
2. What is the difference between **qualitative** risk assessment and **quantitative** riskassessment?
3. Why is risk acceptance a necessary step in evaluating the risks posed by environmental hazards?
4. In addition to the scientific data on the level of risk an activity or substance poses, what other concerns must be balanced against that information, and why?
5. Complete the following chart regarding the two main approaches to risk management (*figure 17.25*):

|  |  |  |  |
| --- | --- | --- | --- |
|  | Definition | Benefits | Drawbacks |
| **Innocent-until-proven-guilty principle** |  |  |  |
| **Precautionary principle** |  |  |  |

1. What occurred at the Stockholm Convention, and why was it important?

**Chapter 17 Vocabulary List**

|  |  |
| --- | --- |
| Disease | . |
| Infectious disease | . |
| Chronic disease | . |
| Acute disease | . |
| Epidemic | . |
| Plague | . |
| Malaria | . |
| Tuberculosis | . |
| HIV/AIDS | . |
| Ebola | . |
| Mad Cow Disease | . |
| Bird Flu | . |
| West Nile Virus | . |
| Emergent infectious disease | . |
| Toxicology | . |
| Neurotoxin | . |
| Carcinogen | . |
| Mutagen | . |
| Teratogen | . |
| Allergen | . |
| Endocrine disruptor | . |
| Dose-response study | . |
| Acute study | . |
| LD50 | . |
| ED50 | . |
| Chronic study | . |
| Retrospective study | . |
| Prospective study | . |
| Synergistic interaction | . |
| Biomagnification | . |
| Persistence | . |
| Risk assessment | . |
| Risk acceptance | . |
| Risk management | . |
| Precautionary principle | . |
| Stockholm convention | . |