IB Environmental Systems and Societies
Summer Reading 2016

*Silent Spring*
By Rachel Carson

This summer you will be reading Rachel Carson’s *Silent Spring* as an introduction to IB: Environmental Systems and Societies. This book, in many ways started the environmental movement. The content of the book will also be referenced throughout the year as we learn more about the topics that Carson discusses.

You may purchase your own copy of the book (the edition does not matter) or you can read it on Google Books, Kindle, etc. There is no need to have a hard copy of the book unless you really want one. Used books are great, and very eco-friendly! Try betterworldbooks.com!

The questions below are meant to guide your reading. You DO NOT need to have written answers to these questions. However making notes may be helpful. Several of these questions will be on an open-note/open-book test during the first week of school. HINT: Answering the questions could be helpful for the test. I will not be collecting or grading your notes, but they will of course help you on the test.

**Introduction:**
Please read the introduction written by Al Gore. This may or may not be included in your text, if it is not you can find it here: [http://clinton2.nara.gov/WH/EOP/OVP/24hours/carson.html](http://clinton2.nara.gov/WH/EOP/OVP/24hours/carson.html)

**Chapter One: “A Fable for Tomorrow”**
1) When *Silent Spring* first came out, Carson faced fierce opposition. Why, according to Gore, would people try to refute her research, and how did they try to do it?
2) Explain how the title of the book can be derived from Chapter One.

**Chapter Two: “The Obligation to Endure”**
1) How long does it take for life to adjust to natural environmental hostilities?
2) How do human produced pollutants differ from natural environmental chemicals?
3) Why does Carson believe insecticides should be called biocides?

**Chapter Three: “Elixirs of Death”**
1) How were chemical pesticides originally discovered and used?
2) Explain how DDT is passed on and concentrated in a food chain.
3) Identify the qualities that make the “new” chemical pesticides more dangerous than their predecessors.
4) DDT is one of the pesticides that Rachel Carson lists as being harmful for the environment. Explain why people thought DDT was a wonderful invention when it first came on the market.

**Chapter Four: “Surface Waters and Underground Seas”**
1) Describe some ways that insecticides can inadvertently enter human water supplies.
2) The interconnectedness of water poses big problems for controlling and containing pesticides once they enter the aquatic ecosystem. Explain why.
3) An unintended effect of pesticide use on crops is the runoff of these chemicals into the groundwater supply. Discuss THREE issues Carson raises about the entry of pesticides into our groundwater system.

**Chapter Five: “Realms of the Soil”**
1) Discuss the need for healthy soil and the role decomposition plays in creating a healthy soil.
2) Discuss the negative impacts pesticides may have on soil and soil organisms.
Chapter Six: “Earth’s Green Mantle”
1) How do humans judge the value of a plant?
2) Describe some methods of biological control that are safer than chemicals.
3) Discuss THREE of the concerns raised by Carson in her discussion of what she considered the destruction of roadside plants in New England.

Chapter Seven: “Needless Havoc”
1) What are the advantages of biological control of the Japanese Beetle?
2) Use the example of Japanese beetle to explain why Carson accuses the government agencies responsible for protecting the public of creating needles havoc.

Chapter Eight: “And No Birds Sing”
1) Explain the connection between the demise of the elm tree and the disappearance of birds in North America.
2) Use either the example of the robin or the bald eagle to illustrate what Carson means by the biomagnification of chemical pesticides in the environment.

Chapter Nine: “Rivers of Death”
1) Use ONE of the following examples to explain how the use of chemical pesticides on land is having a great impact on bodies of water.
   - Spray to control budworm by the Canadian Government in Miramichi
   - Spraying in Alabama of the cotton crops in an attempt to control the boll weevil
   - Spraying near shallow ponds of Milkfish in Asia
   - Sparing around Florida’s Indian River to control the larvae of the sandfly
2) Explain why Carson is greatly concerned about the impact of pesticides on bays and estuaries.
3) Explain what Carson describes as the short-term effects of DDT in the salmon habitat and the long-term effects of the DDT in the salmon habitat.

Chapter Ten: “Indiscriminately From the Skies”
1) How did DDT affect the milk supply in the US?
2) How did the agricultural department in Texas get farmers to use chemicals?
3) Use the example of the Gypsy Moth OR the Fire Ants to discuss Carson’s concern that we spray these new chemical indiscriminately from the skies.

Chapter Eleven: “Beyond The Dreams of the Borgias”
1) What is Carson referring to when she writes that there is a human price for the use of toxins?
2) Why is it so crucial that human beings begin to see themselves as an essential part of the natural world?
3) Why did she believe that people resisted thinking about themselves in those terms?
4) Carson states that the FDA should NOT permit any minimum levels. What does she mean by this statement? What does she propose we should do instead?

Chapter Twelve: “The Human Price”
1) Carson is very concerned about the delayed effects. What does she mean by the delayed effects and why do they pose a problem?
2) Carson feels the public needs to understand the concept of interdependence. Explain the concept of interdependence.
3) Why does Carson argue that you cannot really compare human exposure to tests on lab animals with humans’ exposure.
4) When chemicals mix in the environment they can produce synergetic effects. What do we mean by synergetic effects?
Chapter Thirteen: “Through A Narrow Window”
1) Do you agree that the project of controlling nature is arrogant, foolish, and dangerous, as Carson argues? Why or why not?
2) Identify THREE problems that have been documented in organisms due to the systematic withholding of oxygen from the cell.

Chapter Fourteen: “One In Every Four”
1) Carson argues the best approach to cancer is NOT finding a cure, but focusing on preventing cancer in the first place by dramatically altering our use of chemicals and radiation. Why?
2) What does the section title, “One in Every Four”, refer to?

Chapter Fifteen: “Nature Fights Back”
1) Explain how Carson thinks “Nature Fights Back.” What examples does she offer to support this idea?
2) Carson argues that chemicals are NOT the best control of insects. What does Carson argue is the best control of pest insects and why?
3) Explain why Carson is alarmed by the fact that the chemical industry was pumping millions of dollars into university research.

Chapter Sixteen: “The Rumblings of an Avalanche”
1) Discuss how insects are able to develop a resistance to pesticides in a relatively short time period.
2) Explain why Carson states that “we may be making are enemies stronger and thus harder to control”.
3) What have been the two primary solutions employed by the chemical industry in response to insect resistance.

Chapter Seventeen: “The Other Road”
1) Explain what alternatives are available to chemical insecticides. Why are these alternatives more ecologically sound?
2) According to Carson the best alternative to chemicals are biological controls. Discuss THREE of the alternative controls proposed by Carson.