

AP Biology / Summer Assignment / *Silent Spring* by Racheal Carson

- All answers will be hand-written.
- All answers will be in complete sentences.
- All answers will be in blue ink only.
- Skip one line between each answer.
- Summer Assignment is due on the first day of class.

Chapter 1 - A Fable for Tomorrow

1. Explain how the title of the book can be derived from Chapter One.

Chapter 2 - The Obligation to Endure

1. Explain the cycle of Strontium 90 when released into the environment.
2. How long does it take for life to adjust to natural environmental hostilities?
3. How do human produced pollutants differ from natural environmental chemicals?
4. Why does Carson believe insecticides should be called biocides?

Chapter 3 - Elixirs of Death

1. How were chemical pesticides originally discovered and used?
2. What are some of the dangers of the use of arsenic?
3. Explain how DDT is passed on and concentrated in a food chain.
4. Describe the dangers of the chemical known as dieldrin.
5. What is “potentiation” and why is it a serious hazard?
6. What is a systemic insecticide and how does it work?
7. What does a mutagen do?

Chapter 4 - Surface Waters and Underground Seas

1. Describe some ways that insecticides can inadvertently enter human water supplies.
2. What happened in Clear Lake California?
3. How can city water supplies from reservoirs be inadvertently poisoned by humans?

Chapter 5 - Realms of the Soil

1. Give some specific examples of how some pesticides can affect the beneficiary components of the soil.
2. What kind of chemical problem affected baby food and peanuts?

Chapter 6 - Earth’s Green Mantle

1. How do humans judge the value of a plant?
2. What is happening to the sage plant community out west and why?
3. Describe the fall of the Bridger National Forest.
4. Describe some methods of biological control that are safer than chemicals.

Chapter 7 - Needless Havoc

1. Describe the effects of indiscriminate Japanese Beetle control done in the Greater Detroit area.
2. Describe the impact of Sheldon, Illinois' Program of Pest control
3. What are the advantages of biological control of the Japanese Beetle?

Chapter 8 - And No Birds Sing

1. Explain the connection between the demise of the elm tree and the disappearance of birds in North America.
2. Explain the research results of John Mehner on robins at Michigan State University.
3. Discuss why spraying elm trees to "protect" them actually ended up hurting them.
4. Make a comparison between the 1959 Parathion assault in river bottomlands of Southern Indiana and the current suburbia assault on residential lawns.

Chapter 9 - Rivers of Death

1. What were the pros and cons of the Fire Ant Eradication Program?
2. Summarize the findings of Dr. Herbert R. Mills in Florida.

Chapter 10 - Indiscriminately from the Skies

1. How did DDT affect the milk supply in the US?
2. How did Sales Bonanza use the fire ant issue to increase their sales?
3. How did the agricultural department in Texas get farmers to use chemicals?

Chapter 11 - 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?

Chapter 12 - The Human Price

1. Carson invokes the term ecology (p189) to describe the web of life – or death... What role does this concept play in her analysis?

Chapter 13 - 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?

Chapter 14 - One in Every Hour

1. After reading Silent Spring, how would you characterize its author? Is she a science writer? An environmental activist? A philosopher?

Chapter 15 - Nature Fights Back

1. Explain how Carson thinks "Nature Fights Back." What examples does she offer to support this idea?

Chapter 16 - The Rumbblings of an Avalanche

1. How are Darwin's ideas of survival of the fittest so well illustrated by Carson's observations on the effects of pesticides?

Chapter 17 - The Other Road

1. Explain what alternatives are available to chemical insecticides. Why are these alternatives more ecologically sound?
2. What connections can be made to concepts and information that you have learned in science and social studies?
3. Does the book end optimistically or pessimistically? Cite a passage to back up your opinion.

Additional Questions:

1. Draw a structural formula (picture) of a chlorinated hydrocarbon. Name four pesticides used in the book that are chlorinated hydrocarbons. Name the three characteristics of chlorinated hydrocarbons that make them a threat to humans.
2. Name two organic phosphate pesticides mentioned in the book. Why is this pesticide a threat to humans?
3. Describe the chemical treatment used to eradicate **two** of the following: the Japanese beetle, Dutch elm disease, fire ant, and gypsy moth. Be able to describe the outcome and any associated problems.
4. Describe and /or sketch the food chain involving a fiddler crab.
5. According to the author, what two things do most "modern insect control programs ignore"?
6. What four ways does the author suggest as possible biological controls of pests?