INTEGRATED
PEST MANAGEMENT

Unit 2 Section 2 Lesson 7
Fact or Fiction?

Focus Areas: Pest Control Methods - Chemical; Language Arts

Focus Skills: Analyzing literary forms, recognizing truth in fiction

Level of Involvement: MINIMAL
Unit 2 Section 2 Lesson 7: Fact or Fiction?

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Objectives

* To examine literary forms as a source of public address
* To better understand the environmental impact of indiscriminate pesticide use

Essential Questions

* How does fiction reflect reality?
* Why does the indiscriminate use of pesticides pose a threat to Earth’s ecological balance?
* Why is a fable an effective form for delivering an important message?

Essential Understandings

* Fiction, particularly science fiction, often predicts future facts.
* Indiscriminate use of pesticides can cause environmental chain reactions.

Background

Use Handout 1 "The Facts Behind the Fiction"
Vocabulary

**blight**
- plague, misfortune

**counterparts**
- equivalents, others that are very similar

**indiscriminate**
- without proper judgement

**maladies**
- illnesses, ailments

**moribund**
- wasting, dying

**specter**
- spirit, ghost

Challenge

Find the truth within the fiction!

Logistics

**Time:** 40 to 60 minutes
**Group size:** 2 to 30
**Space:** seating for group
Unit 2 Section 2 Lesson 7: Fact or Fiction?

Materials

- copies of Rachel Carson’s *Silent Spring*, Chapter 1, *A Fable for Tomorrow*, one per individual
- copies of vocabulary list, one per individual
- Handout 1 *The Facts Behind the Fiction* *
- Assessment for an Illustration/Poster *

* single copy provided

Preparations

1. Make copies of the fable and Handout 1.
2. Review vocabulary.

Activity

Introduction

Option #1

If group is familiar with fables, review their form and purpose.

Option #2

If the fable is a new literary form, summarize various fables (e.g., *The Tortoise and The Hare*, *The Goose With the Golden Eggs*, etc.).

1. Discuss the characteristics of a fable.
2. Explain that fables are only one form of literature that reflects truth and point out behavioral lessons.
Activity

Introduction (continued)

3. Science fiction is another form where the fiction of one time may well prove to be scientific fact at some future date. Ask for examples from books, such as:

   a) Submarines in Jules Verne’s *20,000 Leagues Under the Sea*
   b) Travel to the moon in Verne’s *From the Earth to the Moon*
   c) Ray Bradbury’s big screen, interactive TV and headsets in *Fahrenheit 451*

The group may suggest other examples.

4. Tell the group they are going to read an excerpt from a book written by a marine biologist in the early 1960s.

5. Write the Challenge on the board.

Involvement

1. Give each group member a copy of *A Fable For Tomorrow* and allow time to read.

2. Depending on time restrictions and level of capability, you may want to read the selection while the group follows along.

Follow Up

Discussion Questions

1. What was the significance of the setting (Middle America) in this fable?

2. What is the meaning of the title *Silent Spring*?

3. What was the white powder that fell from the sky?

4. What warning was Rachel Carson giving to Americans through this fable?
5. Why did Rachel Carson, a recognized marine biologist, choose fiction rather than a scientific essay as a vehicle for her message?

* Have participants speculate and role play from the perspective of various companies who manufactured pesticides, farmers who used pesticides as an effective, economically practical way to control pests, the government and the general public to the publication of *Silent Spring*.

* Omit ecological groups since *Silent Spring* pre-dated formation of these groups.

* Distribute copies of Handout 1, *The Facts Behind the Fiction*.

* Call the group’s attention to paragraphs #6-8 of Handout 1.

6. Were Rachel Carson's predictions correct?

* Share paragraphs #9 and 10 of Handout 1.

* Call attention to the absence of environmental groups in the role play which accompanied question #5.

* Point out that Rachel Carson and her book pioneered the environmental movement and led to the establishment of the Environmental Protection Agency (EPA) as part of our national government.

* Read paragraph #11 of Handout 1. Government response was the establishment of the EPA and regulations regarding pesticide use. The Department of Agriculture, through Integrated Pest Management (IPM), offered solutions to living with these new regulations while still managing pests, maintaining high levels of food and fiber production, and reducing the use of chemical pesticides.
Follow Up Answer Key

1. This situation could occur anywhere. (Analysis)

2. There came a time when all the animals (songbirds, etc.) fell victim to the strange blight. (Drawing Conclusions)

3. The powder was most likely a pesticide of human design. (Analysis)

4. Carson is warning the population of the hidden dangers of indiscriminate pesticide use. (Drawing Conclusions)

5. Carson’s message was meant to warn all Americans, not merely the scientific community. (Analysis)

6. Answers will vary. (Application of Background Knowledge)

Assessment

* Design a graphic to be used as a cover for the book Silent Spring. The purpose of your cover is to attract readers to the book and draw their attention to the dangers of indiscriminate pesticide use.

* Design a poster to warn people today of the continued indiscriminate use of pesticides on lawns and schoolyards.

Follow Through

Focus Skills: Formulating and defending opinions, recognizing causal relationships, accessing information, presenting information in visual format
1. Research recent incidents of environmental problems prompted by chemical disasters, such as the Valdez oil spill or soil and water contamination at the Hamden, Connecticut schools.

   a. What are toxic superfund sites?

   b. Where are superfund sites located in the United States?

2. Debate the statement, Chemically-based pesticides that are harmful to humans should be banned.

3. Read *Silent Spring* and write a book review for the *New York Times*.

4. Develop a flow chart illustrating the causes and effects of pesticide use on an ecosystem.
Unit 2 Section 2 Lesson 7: Fact or Fiction?

Handout 1

The Facts Behind the Fiction

1. In World War I, the U.S. Army began testing DDT (dichloro-diphenyl-trichloroethene). It was effective in combating disease-like typhus spread by body lice, and mosquitoes that could cause malaria that were prevalent in the Pacific Ocean Islands.

2. The use of DDT continued because it was so effective in eliminating pests that destroy food and carry diseases. It was used extensively by homeowners as well to prevent insects invading homes. Called the atomic bomb of the insect world, it proved to be far more effective than previous pesticides, and far more dangerous.

3. By the 1960s, Americans were using five times as much pesticide as they had in 1945. These included substances discovered by the Germans during their research on nerve gas, such as Parathion and Malathion. Both of these pesticides attack an insect’s nervous system. New herbicides for controlling weeds were also being developed, such as 2,4-D.

4. As far as anyone knew, these new compounds were more effective, less toxic, and much cheaper to use. The pesticide wake-up call came in 1957 when DDT was being sprayed all over the Northeast to control gypsy moths. Plymouth County, Massachusetts used a similar mixture of chemicals to kill mosquitoes in marshes. A bird sanctuary was sprayed and resulted in the deaths of hundreds of songbirds.

5. The owner, Olga Hucker, sent a letter to The Boston Herald describing the tragedy. She sent a copy to her friend, Rachel Carson, a biologist and well-respected author of The Sea Around Us, a book that explained the complex interconnections of life forms in the oceans. Carson felt that this event provided further evidence that pesticides move throughout the food chain and kill not only insects, but also wildlife. She researched her theory for the next four years and in 1962 published her findings in The New Yorker.

6. Shortly after, her book, Silent Spring was published. She described the potential doom that could befall one community in which pesticides had killed wildlife and made people ill. She warned of the dangers of overuse of herbicides and chemicals that killed plants as well as trees.

7. She showed how pesticides such as DDT are stored in a creature’s fat. Over time, as creatures eat other animals, the toxic effect of the pesticide moving through the food chain caused great harm to species great and small. Pesticides were found in fish and Carson warned that people who ate fish were building up pesticide poisons in their own bodies.
8. While she did not advocate a ban on all pesticides, Carson did want strict controls. Groups opposed to controlling the use of pesticides accused her of faulty research and exaggerating the risks. Velsicol Chemical Corporation even attempted to halt the publication of the book, *Silent Spring*.

9. Fortunately, they were not successful. Unfortunately, in 1963 her predictions became a reality. Millions of catfish in the Mississippi River began dying. Their death was traced to the pesticide, Endrin, which was coming from a manufacturing plant owned by Velsicol - the same company that attempted to stop publication of Rachel Carson's book.

10. The impact traveled beyond the fish and began to affect the bird population. Pesticides the birds absorbed from the fish attacked the calcium the birds needed to produce strong eggshells. When the birds laid eggs and attempted to incubate them, the shells cracked and the young within them died.

11. Humans, particularly migrant farm workers, also became victims of the overuse of pesticides. Many worked in the fields as the chemicals were sprayed. The cancer rates soared, and by the mid-1960s views expressed in *Silent Spring* were no longer scientific theory but biological reality. Americans demanded a stop to the practices that polluted the nation’s air, land, and water. The Environmental Protection Agency (EPA) was established by the U.S. Congress to protect our national resources and monitor our environmental problems. While it has not eliminated pesticide contamination, its regulating practices and the adoption of Integrated Pest Management (IPM) have led to the development of safer pesticides and have encouraged the use of less toxic, more environmentally-sound materials.
### Assessment for an Illustration/Poster

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<th>Criteria</th>
<th>Possible Points</th>
<th>Points Earned</th>
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**Comments:**

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"A Fable for Tomorrow"

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