

Read the selection below and answer the questions that follow it.

Teen's Recycling Recipe Bags Award

Landfills are clogged with plastic bags that can take up to 1000 years to decompose. Daniel Burd, a 17-year-old high school student from Waterloo, Ontario, has discovered a way to break down the plastic in a matter of months.

Burd's idea won the top prize of \$10 000 and scholarships at the 2008 Canada-Wide Science Fair in Ottawa.

Burd said his idea literally hit him on the head one day. "Each time I open the closet ... the plastic bags are on the top shelf and they always fall down like an avalanche onto my head." One day he just got tired of it, so he researched what other people are doing with these bags.

Burd discovered that approximately 500 billion plastic bags are used worldwide each year. Many end up in the oceans, where they are ingested by animals that often die as a result.

Burd's hypothesis was that if plastic bags can eventually break down, it should be possible to speed up the process by isolating and concentrating the micro-organism responsible for the decomposition.

To test his hypothesis, Burd took soil samples from the landfill and mixed them with polyethylene (the substance used to make plastic bags) and a solution to encourage bacterial growth. After concentrating the solution and incubating it for 12 weeks, Burd was able to degrade the plastic by 43 percent in six weeks. He figures the bacterial soup would entirely break down plastic bags in three months.

Burd envisions future "recycling stations" acting as large composters for plastic bags. Meantime, he says he hopes to attend a university to study science.



Adapted from "Waterloo student devises bacterial soup that breaks down plastic in matter of months" by Kristine Owrain, the Canadian Press, July 2, 2008. Reprinted with permission of the Canadian Press. © Photo: *The Waterloo Region Record*/The Canadian Press/David Bebee.

Multiple-Choice (Record the best or most correct answer on the Student Answer Sheet.)

- 1** Which paragraph describes the event that happened first?
- a paragraph 2
 - b paragraph 3
 - c paragraph 4
 - d paragraph 5
- 2** What is the meaning of “hypothesis” as used in paragraph 5?
- a a recipe
 - b a problem
 - c a prediction
 - d an experiment
- 3** What is responsible for the decomposition of plastic bags?
- a bacteria
 - b polyethylene
 - c additional water
 - d large composters
- 4** What is the purpose of the information inside the parentheses in paragraph 6?
- a It provides an explanation.
 - b It refers to another experiment.
 - c It presents a step in the experiment.
 - d It emphasizes the importance of the problem.
- 5** Why did Burd’s experiment win the top prize?
- a It could solve a significant problem.
 - b Burd plans to study science in university.
 - c It encourages people to reduce their use of plastic bags.
 - d Burd discovered the bacteria that break down plastic bags.



Written Answer

- 6** Explain how Burd’s project demonstrates the work of a scientist. Use specific details from the selection and your own ideas to support your answer.

Rough Notes

Use the space below for rough notes. Nothing you write in this space will be scored.

End of Section I. Continue to Section II. 