

---

**HYDROVILLE CURRICULUM PROJECT – SECTION I**

---

**Student Problem Solving Post Test**

Imagine that the Oregon Health Division announced today that the small town of Mayville (an imaginary town!) has 10% more cancer cases than other towns of similar size in Oregon. As a citizen of Mayville, you are concerned about the announcement. Assume that you have the opportunity to participate in a student citizens' committee to examine this finding and to understand what, if anything, is different about Mayville.

Listed below are a number of possible explanations for why Mayville might have more cancer cases than other similar communities. For each reason, mark how important you think it might be in finding out why Mayville has more cancer cases than other towns.

1. Differences in the use of household chemicals between Mayville and other towns.

- A. Very Important
- B. Important
- C. Slightly Important
- D. Not Important
- E. Don't Know

2. Differences in the use of agricultural chemicals between Mayville and other towns.

- A. Very Important
- B. Important
- C. Slightly Important
- D. Not Important
- E. Don't Know

3. Differences in the lifestyles (e.g., diet, exercise) of the people who live in Mayville and the people who live in other towns.

- A. Very Important
- B. Important
- C. Slightly Important
- D. Not Important
- E. Don't Know

4. Differences in the natural environment (e.g., soils, water) of Mayville and the natural environment of other towns.

- A. Very Important
- B. Important
- C. Slightly Important
- D. Not Important
- E. Don't Know

5. Differences in how well scientific studies are done to determine the number of cancer cases in Mayville and in other towns.
- A. Very Important
  - B. Important
  - C. Slightly Important
  - D. Not Important
  - E. Don't Know
6. No explainable reason, just a matter of chance.
- A. Very Important
  - B. Important
  - C. Slightly Important
  - D. Not Important
  - E. Don't Know
7. Differences in the ages of people who live in Mayville and the people who live in other towns.
- A. Very Important
  - B. Important
  - C. Slightly Important
  - D. Not Important
  - E. Don't Know

Suppose that you and the student citizens' committee learned that Mayville was once the site of a plant that produced agricultural chemicals. The plant was one of the major employers in Mayville, but it is now closed. Listed below are a number of actions that the student citizens committee can recommend. Indicate the priority you would give to each one.

8. Evacuate the community.
- A. Very High Priority
  - B. High Priority
  - C. Moderate Priority
  - D. Low Priority
9. Undertake another scientific study of the community to confirm the report of the Oregon Health Division.
- A. Very High Priority
  - B. High Priority
  - C. Moderate Priority
  - D. Low Priority
10. Contact scientific experts outside of the community to get their opinion.
- A. Very High Priority
  - B. High Priority
  - C. Moderate Priority
  - D. Low Priority

11. Inform the community about the abandoned site.
- A. Very High Priority
  - B. High Priority
  - C. Moderate Priority
  - D. Low Priority

12. Determine what chemicals were manufactured at the site.
- A. Very High Priority
  - B. High Priority
  - C. Moderate Priority
  - D. Low Priority

Suppose that your committee wanted to do a study to determine whether or not the abandoned site could be a cause of the cancers in Mayville. Listed below are a number of things that your committee can do. Read each one carefully and then indicate how informative it would be in helping solve the problem of why there are more cases of cancer in Mayville than other towns.

13. Look for empty containers at the abandoned chemical plant site.
- A. Very informative for helping solve the problem
  - B. Somewhat informative
  - C. Slightly informative
  - D. Not informative

14. Talk to local residents who may remember the chemical plant when it was active.
- A. Very informative for helping solve the problem
  - B. Somewhat informative
  - C. Slightly informative
  - D. Not informative

15. Have a soil test done to determine what chemicals may be in the soil.
- A. Very informative for helping solve the problem
  - B. Somewhat informative
  - C. Slightly informative
  - D. Not informative

16. Check the local library for newspaper reports about the plant.
- A. Very informative for helping solve the problem
  - B. Somewhat informative
  - C. Slightly informative
  - D. Not informative

17. Check the Internet for information about causes of cancer.
- A. Very informative for helping solve the problem
  - B. Somewhat informative
  - C. Slightly informative
  - D. Not informative
18. Determine where Mayville gets its water supply.
- A. Very informative for helping solve the problem
  - B. Somewhat informative
  - C. Slightly informative
  - D. Not informative
19. Conduct a survey to determine the community's opinions about the seriousness of the problem.
- A. Very informative for helping solve the problem
  - B. Somewhat informative
  - C. Slightly informative
  - D. Not informative

As part of the student citizens committee studying this problem, you have an opportunity to take on different roles as part of the committee's work. For each of the following roles, indicate how comfortable you would be:

20. Working with others on the committee to determine the problem.
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable
21. Talking with other community members about the problem.
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable
22. Talking with outside experts about the problem and reporting back to the committee.
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable

23. Helping with the technical or scientific parts of a study of the abandoned plant site.
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable
24. Preparing a report or summary of the committee's findings.
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable
25. Presenting the committee's views about the problem to the press (e.g., newspapers, radio).
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable
26. Presenting the results of the committee's work at a community meeting.
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable
27. Talking with the owners of the abandoned plant about the problem.
- A. Very Comfortable
  - B. Slightly Comfortable
  - C. Slightly *Un*comfortable
  - D. Very *Un*comfortable

Suppose the Oregon Health Division did a new study, and it showed only a 2% difference between the cancer rate in Mayville and other communities, rather than the 10% reported earlier.

28. Which study would you believe more, the first one (10% difference), or the second one (2% difference)?
- A. The first study (10% difference) is definitely right.
  - B. The first study is probably right.
  - C. They are both about the same.
  - D. The second study (2% difference) is probably right.
  - E. The second study is definitely right.

Listed below are some explanations why the two studies might be different. For each one, indicate whether you agree or disagree.

29. Scientific studies are always changing their conclusions and you can never know which one is right.

- A. Strongly Disagree
- B. Disagree
- C. Agree
- D. Strongly Agree
- E. Don't Know

30. The difference between the two studies is probably due to errors in the studies.

- A. Strongly Disagree
- B. Disagree
- C. Agree
- D. Strongly Agree
- E. Don't Know

31. The first study is correct because it shows a higher cancer rate.

- A. Strongly Disagree
- B. Disagree
- C. Agree
- D. Strongly Agree
- E. Don't Know

32. The second study is correct because it shows that Mayville is more like all the other communities.

- A. Strongly Disagree
- B. Disagree
- C. Agree
- D. Strongly Agree
- E. Don't Know

33. The difference in the results of the two studies is probably due to chance.

- A. Strongly Disagree
- B. Disagree
- C. Agree
- D. Strongly Agree
- E. Don't Know

## **Student Problem Solving Post Test**

---

### **HYDROVILLE CURRICULUM PROJECT – SECTION II**

---

#### **Chemical Pesticides in the Environment: A Survey of Attitudes and Perceptions**

We are studying how students like you think about chemicals in the environment and particularly chemical pesticides.

Chemicals are all around us and are a part of modern life. Some of these chemicals are natural ones and are the basic building blocks of all living things. In the strictest sense, for example, water is a chemical. However, in this survey, when we talk about chemicals we mean industrial chemicals that have been produced for use in commerce, agriculture and various consumer products. These include chemical products like plastics, gasoline, pharmaceutical drugs, food additives, cosmetics, and household cleaning products. Pesticides that are used in agriculture and in the home are also chemical products.

This is a survey of attitudes and perceptions. There are no right or correct answers, only your considered opinions. Read each of the items carefully and give us the best answer you can, given what you know or believe. (Mark one answer for each statement)

34. In general, chemical pesticides make life safer.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
35. Overall, chemical pesticides used in agriculture do more good than harm.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
36. Chemical pesticides sold for use by consumers in their homes are not a source of environmental health risk.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know

37. If a chemical pesticide is released into the environment, then everyone in that environment is exposed to the chemical.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
38. For most of the chemicals I am exposed to in daily life, including chemical pesticides, I feel I know how to protect my health and safety.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
39. I have read and can understand most of the warning labels on chemical pesticides in my home.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
40. If a person is exposed to a chemical pesticide that has been shown to cause cancer in laboratory animals, then that person will probably get cancer someday.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
41. If a person is exposed to a chemical pesticide that can cause cancer in humans, then that person will probably get cancer someday.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
42. I can read and understand most of the warning labels on chemical pesticides commonly used in the home.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know

43. If a scientific study produces evidence that a chemical pesticide causes cancer in animals, then we can be reasonably sure the pesticide will cause cancer in humans.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
44. The way that an animal reacts to a chemical pesticide is a good way to tell how a human would react to it.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
45. We should reduce or eliminate our reliance on the use of animals in research to test the safety of chemicals used in consumer products.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
46. If the general public understood more about science, then solutions to environmental problems, including chemical pesticides, would be easier.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
47. Risks from chemical pesticides usually seem larger to people who don't understand very much about science.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know

## **Student Problem Solving Post Test**

---

### **HYDROVILLE CURRICULUM PROJECT – SECTION III**

---

#### **Science and Daily Life**

This survey asks your opinions about science and daily life. Please read each item carefully and indicate whether you “strongly disagree”, “disagree”, “agree”, or “strongly agree.”

48. I am able to apply science to things that are part of everyday life.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
49. I know how to use science to help make decisions that protect my health and safety.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
50. Studying science is the best way of understanding things in the world.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
51. I am comfortable talking about science with other people.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
52. I am generally interested in new developments in science and technology.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know

53. In general, science is making our lives healthier, easier and more comfortable.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
54. Science can help us make better decisions about how to protect the environment.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
55. Science can answer the important questions about the safety of chemicals in the environment.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know
56. Science can determine when exposure to human-made chemicals is safe or not safe for my family and me.
- A. Strongly Disagree
  - B. Disagree
  - C. Agree
  - D. Strongly Agree
  - E. Don't Know