

Water Evidence Works

Trace how evidence can lead to solutions that protect communities.

5.4.A “explain how scientific discoveries and innovative solutions to problems impact science and society; and”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each piece of evidence or scientific discovery. Circle each innovative solution or societal impact, then use matching numbers to connect an underlined idea to a circled result.

Finding a Hidden Water Problem

- ① In 1854, cholera spread through London, England. Many people believed the disease traveled through bad-smelling air. Doctor John Snow studied where sick people lived. He made a map of cholera cases and noticed that many were near the Broad Street water pump. His investigation gave evidence that something in the water, not the air, was spreading the disease.
- ② Snow shared his evidence with local leaders. They removed the pump handle so people could not draw water there. The number of new cholera cases fell. This solution protected people right away, even before scientists identified the bacterium that causes cholera. Snow’s work also helped change how scientists investigate disease by using observations, maps, and evidence.
- ③ Later research showed that tiny living things, including bacteria, can cause disease. Cities used this discovery to build systems that filter water, add carefully measured disinfectants, and carry waste away from drinking-water sources. These innovations have prevented many waterborne illnesses. They also require society to pay for pipes, testing, and trained workers so communities can keep water safe.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What idea about cholera did Snow’s investigation challenge, and what evidence challenged it?

2 How did removing the pump handle affect people in London?

3 How did later research about bacteria affect both science and society?

4 Why do safe-water systems require communities to pay for pipes, testing, and trained workers?

3 YOUR TURN _____ Your own words

Choose the Broad Street pump response or a modern city water system. In 4 or 5 sentences, name the problem it addressed, explain the evidence or discovery that informed it, describe the solution, and explain two impacts on science or society.

PART 1 • READ AND MARK

Underline each piece of evidence or scientific discovery. Circle each innovative solution or societal impact, then use matching numbers to connect an underlined idea to a circled result. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What idea about cholera did Snow's investigation challenge, and what evidence challenged it?	It challenged the idea that bad-smelling air spread cholera. Snow's map showed that many sick people lived near the Broad Street water pump.
2	How did removing the pump handle affect people in London?	It stopped people from drawing water from that pump, and the number of new cholera cases fell.
3	How did later research about bacteria affect both science and society?	It showed that bacteria can cause disease. Cities used the discovery to create water systems that filter and disinfect water and move waste away, preventing many illnesses.
4	Why do safe-water systems require communities to pay for pipes, testing, and trained workers?	Communities need these resources to build, check, and maintain systems that keep drinking water safe.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Modern city water systems solve the problem of drinking water carrying disease-causing bacteria. Research showed that bacteria can cause disease, so cities filter water, add measured disinfectants, and move waste away from water sources. These systems prevent many waterborne illnesses. They also lead communities to pay for pipes, testing, and trained workers.

Accept answers that accurately connect evidence or a discovery to a solution and its effects. In the final response, require a clearly stated problem, a passage-based solution, and two accurate impacts.