Impact of Cities on the Water Cycle

Name: _____ Date: _____

Cities can have a significant impact on the natural water cycle. As cities grow, they change the movement and distribution of water, which can have both positive and negative effects on the environment.

One way cities impact the water cycle is by altering the natural landscape. Urbanisation often involves constructing buildings, roads, and other infrastructure, which can replace natural vegetation and soil with impervious surfaces like concrete and asphalt. These surfaces prevent rainwater from soaking into the ground, leading to increased runoff and a reduction in groundwater recharge.

Urban areas also generate additional runoff due to the efficient removal of rainwater through stormwater drainage systems. While these systems help prevent flooding in cities, they can transport pollutants, such as oil, chemicals, and debris, into nearby water bodies. This pollution can harm aquatic ecosystems and degrade water quality.

Furthermore, cities tend to have higher water demands due to increased population and economic activities. This can strain local water resources, leading to overextraction of groundwater or the need to import water from distant sources. Overusing water resources can disrupt the natural flow of rivers and lakes and impact the availability of water for ecosystems and other users downstream.

To lessen the negative impacts of cities on the water cycle, various strategies can be used. Green infrastructure, such as urban parks, green roofs and permeable pavements, can help restore some of the natural water absorption capacity and reduce runoff. Water conservation practices, including efficient irrigation systems, leak detection programs, and public education on responsible water use, can also help reduce water demand and promote sustainable water management in cities.

In conclusion, cities have a significant impact on the water cycle, altering runoff patterns, increasing pollution, and depleting water resources. However, through the implementation of sustainable urban planning and water management practices, it is possible to mitigate these effects and create more resilient and environmentally friendly cities.

1. How do cities impact the water cycle?
    A. They increase groundwater recharge.
    B. They decrease surface runoff.
    C. They reduce pollution in water bodies.
    D. They alter the movement and distribution of water.
2. What can happen to water quality as a result of urbanization?
    A. Improved water quality due to reduced pollution.
    B. Decreased water quality due to increased pollution.
    C. No change in water quality.
    D. Increased availability of clean water.
3. Which of the following strategies can help reduce the negative impacts of urbanisation on the water cycle?
    A. Increasing impervious surfaces in cities.
    B. Decreasing green spaces in urban areas.
    C. Implementing green infrastructure practices.
    D. Increasing water demand in cities.
4. What does the term “groundwater recharge” mean in the context of the water cycle?
    A. The process of urbanisation.
    B. The movement of water in rivers and lakes.
    C. The increase in water demand in cities.
    D. The replenishment of underground water sources.
5. What is the purpose of including information about water conservation practices in the text?
    A. To discuss the impact of climate change on cities.
    B. To highlight the benefits of impervious surfaces.
    C. To explain the process of urbanization.
    D. To suggest ways to reduce water demand and promote sustainability.

6. State one negative consequence of increased surface runoff in urban areas and explain why it is an issue.

7. Discuss two strategies that cities can employ to reduce their water demand and promote sustainable water management.

8. Explain why it is important to implement green infrastructure in urban areas.

9. How would you change the design of your suburb to prevent impacting the water cycle?