



## Carbon Environmental Planning

### Results of Elm Lake Testing

Recent testing of water from Elm Lake reveals high toxin content. These toxins are the result of waste from a nearby Dana plant. Immediate action by Dana Corp. is necessary. Because of the **water cycle**, toxins will not remain confined to Elm Lake.

**Evaporation** will cause **liquid** toxins to become **vapor**. Even frozen toxins can escape in the winter through **sublimation**. When toxins evaporate, they move through the atmosphere through **advection**. Then, through **condensation**, they mix with rain. These toxins may harm crops and livestock. Even crops that are unaffected by the toxins may release the chemicals into the atmosphere. This occurs through **transpiration**.

Through **infiltration**, some of the toxic chemicals may also enter the water table. From there, they could enter the Freedman **Aquifer**. This would mean that the drinking water for seven counties would contain toxins.

All of these ill effects could occur even if the toxins have a very short **residence time** in the lake. The best solution would be to prevent the toxins from entering the **hydrologic cycle**.

## Get ready!

1 Before you read the passage, talk about these questions.

- 1 What are some of the parts of the water cycle?
- 2 Why is the water cycle important for environmental engineers?

## Reading

2 Read the report. Then, mark the following statements as true (T) or false (F).

- 1 \_\_\_ Toxins enter the aquifer through infiltration.
- 2 \_\_\_ Transpiration may contribute to the spread of the toxins.
- 3 \_\_\_ The toxins will have no effect if the residence time is short.

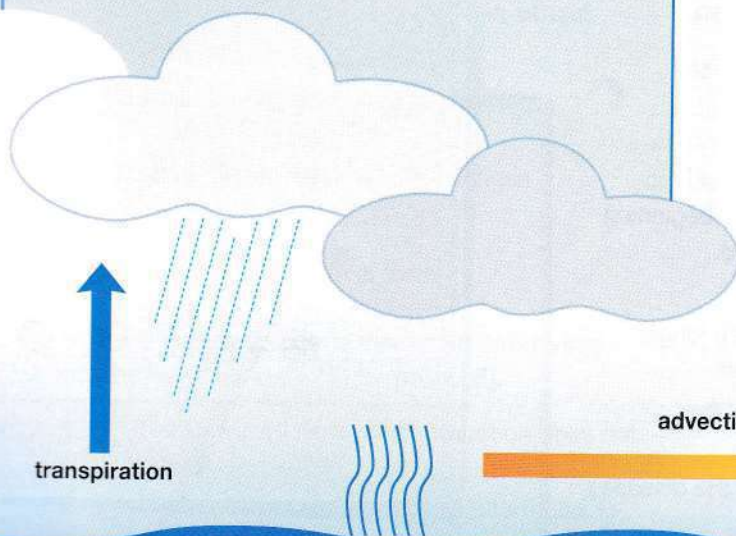
## Vocabulary

3 Fill in the blanks with the correct words or phrases from the word bank.

### Word BANK

water cycle    evaporation    sublimation  
residence time    vapor    liquid  
condensation    aquifer

- 1 The water's \_\_\_\_\_ in the lake was six days.
- 2 The \_\_\_\_\_ is a source of water for the entire region.
- 3 Steam is a common example of a(n) \_\_\_\_\_.
- 4 \_\_\_\_\_ can reduce the amount of water in a glass.
- 5 \_\_\_\_\_ turns a solid into a vapor.
- 6 If something is a(n) \_\_\_\_\_, it can be poured.
- 7 Vapor turns to liquid through \_\_\_\_\_.
- 8 Water is purified through the \_\_\_\_\_.



water cycle



**4 Read the sentence pairs. Choose which word or phrase best fits each blank.**

**1 hydrologic cycle / transpiration**

- A The plants released the toxins during the \_\_\_\_\_ process.  
B The \_\_\_\_\_ redistributes water throughout the Earth.

**2 infiltration / advection**

- A The aquifer was filled through \_\_\_\_\_.  
B Water moves through the atmosphere through \_\_\_\_\_.

**5 Listen and read the report again. Why is infiltration an important part of the water cycle?**

## Listening

**6 Listen to a conversation between a business owner and an environmental engineer. Choose the correct answers.**

- 1 What is the conversation mainly about?  
A understanding the role of the aquifer in the water cycle  
B explaining how sublimation affects solids  
C deciding how to stop the spread of toxins  
D explaining how toxins travel with and in water
- 2 Where will infiltration occur?  
A below the water table  
B at the bottom of the lake  
C in the roots of plants  
D at the bottom of the aquifer

**7 Listen again and complete the conversation.**

**Owner:** I read your hazard report, and I've got some questions. I understand that having these chemicals in the lake is a problem. But I don't **1** \_\_\_\_\_ they could make it all the way to the aquifer.

**Engineer:** Infiltration could take these toxins **2** \_\_\_\_\_ the aquifer.

**Owner:** What does infiltration **3** \_\_\_\_\_?

**Engineer:** It's the process that causes water to **4** \_\_\_\_\_ the soil.

**Owner:** But the chemicals are not being **5** \_\_\_\_\_ the ground. They're in the lake.

**Engineer:** That's true. But once they settle to the bottom of the lake, they come **6** \_\_\_\_\_ with the soil. That's when infiltration happens.

## Speaking

**8 With a partner, act out the roles below based on Task 7. Then, switch roles.**

**USE LANGUAGE SUCH AS:**

*I don't understand ...*

*What does ...?*

*Can you explain ...?*

**Student A:** You are a business owner. Talk to Student B about:

- a hazard caused by your company
- clarifying his or her terms
- understanding the cause of the hazard

**Student B:** You are an environmental engineer. Talk to Student A about a hazard at his or her company.

## Writing

**9 Use the conversation from Task 8 to answer a client's questions.**

Hello Carla,

After reading your report, there are a few things I need you to clear up for me.

What is advection? And why is transpiration a problem for us?

Thanks for your help,  
Walt

Walt,

Carla