



TAKE CARE OF TEXAS: EDUCATOR MATERIALS

VIRTUAL FIELD TRIP HANDOUT

Protecting Texas Water

This handout references the video “Protecting Texas Water” that can be found at [YouTube.com/TakeCareOfTexas](https://www.youtube.com/TakeCareOfTexas). While watching the video, complete the Fill-in-the-Blank section of the handout. Once the video is finished, work in groups of 2-3 to complete the Discussion section.

Name: _____

Fill in the blank

Causes of Water Pollution

Scientists define sources of pollution as either _____ or _____ sources. _____ is introduced into the environment at a singular discharge point, like a pipe, or from a specific location, like a manufacturing facility.

_____ is difficult to control because it comes from everywhere. There are dozens of activities that expose water sources to contamination. Some of these activities include:

- leaking septic tanks.
- homeowners applying _____ and pesticides to their lawns,
- people not picking up after their _____, and
- cars leaking _____.

After water is collected from the source, a team comes in to ensure the water is safe for human consumption. They look for things like _____ in the pipes, check for adequate water pressure and _____, ensure adequate treatment of untreated water, and confirm that the water system is complying with _____.

Types of Water Pollution

- _____ contaminants primarily impact the appearance or other properties of water. For example, soil erosion can cause sediments or organic materials to become suspended in lakes and streams. Also, heavy rains can deposit large amounts of contaminants into bodies of water, making them harder to treat.
- _____ contaminants are elements or compounds that may be naturally occurring or human-made. Examples include nitrogen, bleach, metals, and human or animal drugs. Fertilizers, pesticides, animal waste, and other harmful substances can also wash into our waterways.
- _____ contaminants refer to microbes or microbiological contaminants. Examples include bacteria, viruses, protozoans, and parasites. They can originate from leaking septic systems or areas with livestock.



- _____ contaminants refer to microbes or microbiological contaminants. Examples include bacteria, viruses, protozoans, and parasites. They can originate from leaking septic systems or areas with livestock.
- _____ contaminants can occur naturally or result from human activity. They can become unstable over time and be harmful to living tissue if ingested or absorbed. Interestingly, some locations in Texas have naturally occurring radiation in their groundwater.

How TCEQ Tests for Pollutants

When testing a site, TCEQ uses a hand-held testing kit. This kit analyzes drinking water to see if it has the right amount of _____, such as chlorine. Samples are usually collected in bottles and then sent to the lab for further analysis.

The analyzer tests for multiple parameters at one time, allowing TCEQ to conduct investigations accurately and _____. Chemkeys, which look similar to a microchip, are used with the machine and each Chemkey has a different reagent it can test for.

If something needs further analysis, water is collected in a bottle to send off to the lab. When TCEQ gets results back from the lab, they typically look like this and are calculated in _____. This data helps determine if some type of contamination has occurred in the drinking water.

Ways You Can Help

The scientists at TCEQ ensure that our waters are protected from pollutants, but we need every Texan to help:

- Dispose of your _____ properly, especially if it's hazardous.
- Don't over water your lawn, to prevent erosion and _____.
- Use _____ and fertilizers safely by following the label's directions.
- Teach your family and friends about why it is important to take care of our environment!



VFT-2a (Updated 5/24)

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Discussion Questions

A **watershed** is an area of land from which water drains into a body of water. Scientists examine watersheds to help determine possible sources of pollution. The map below shows an example of a topographic map of a surveyed watershed for a river in Texas. There are several buildings and facilities both inside and outside the river's watershed.

1. Which of the four types of water pollution listed above do you think is most common in your local area? Where do you think the contaminants originate?
2. Discuss a type of water pollution that you've observed. Describe the pollution you observed, where it was, and what type of contaminant you believe it was.
3. What are some small-scale ways individuals can reduce water pollution?
4. What are some larger-scale ways organizations/communities can reduce water pollution?



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Answer Key

Fill in the blank

Causes of Water Pollution

Scientists define sources of pollution as either **point** or **non-point** sources.

Point source pollution is introduced into the environment at a singular discharge point, like a pipe, or from a specific location, like a manufacturing facility.

Non-point source pollution is difficult to control because it comes from everywhere. There are dozens of activities that expose water sources to contamination. Some of these activities include:

- leaking septic tanks.
- homeowners applying **fertilizers** and pesticides to their lawns,
- people not picking up after their **dogs**, and
- cars leaking **oil**.

After water is collected from the source, a team comes in to ensure the water is safe for human consumption. They look for things like **breaks** in the pipes, check for adequate water pressure and **chlorine**, ensure adequate treatment of untreated water, and confirm that the water system is complying with **state regulations**.

Types of Water Pollution

- **Physical** contaminants primarily impact the appearance or other properties of water. For example, soil erosion can cause sediments or organic materials to become suspended in lakes and streams. Also, heavy rains can deposit large amounts of contaminants into bodies of water, making them harder to treat.
- **Chemical** contaminants are elements or compounds that may be naturally occurring or human-made. Examples include nitrogen, bleach, metals, and human or animal drugs. Fertilizers, pesticides, animal waste, and other harmful substances can also wash into our waterways.
- **Biological** contaminants refer to microbes or microbiological contaminants. Examples include bacteria, viruses, protozoans, and parasites. They can originate from leaking septic systems or areas with livestock.
- **Radiological** contaminants can occur naturally or result from human activity. They can become unstable over time and be harmful to living tissue if ingested or absorbed. Interestingly, some locations in Texas have naturally occurring radiation in their groundwater.

How TCEQ Tests for Pollutants

When testing a site, TCEQ uses a hand-held testing kit. This kit analyzes drinking water to see if it has the right amount of **disinfectant**, such as chlorine. Samples are usually collected in bottles and then sent to the lab for further analysis.

The analyzer tests for multiple parameters at one time, allowing TCEQ to conduct investigations accurately and **quickly**. Chemkeys, which look similar to a microchip, are used with the machine and each Chemkey has a different reagent it can test for.

If something needs further analysis, water is collected in a bottle to send off to the lab. When TCEQ gets results back from the lab, they typically look like this and are calculated in **milligrams per liter**. This data helps determine if some type of contamination has occurred in the drinking water.



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- Dispose of your waste properly, especially if it's hazardous.
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- Use pesticides and fertilizers safely by following the label's directions.

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