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USGS Logo: Text: science of a changing world.


The Chesapeake Bay Watershed

# Lesson 1: Understanding the sources and importance of this vital natural resource

## Vocabulary

When studying a new topic, it makes it more interesting when you know some of the key words used in that subject. Using websites about the Chesapeake Bay watershed, find the definitions to the following words.

* estuary
* groundwater
* headwater
* salinity
* tributaries
* watersheds

## Activity

The Chesapeake Bay watershed is an incredible water resource to millions of people. In this activity, you will take on the role of USGS scientists trying to help different regions of the Chesapeake Bay watershed understand how they use the water from this resource. You get to show your understanding of the bodies of water that feed the watershed in your chosen state.

**My group gets to research the following district or state:**

**What are the *rivers* that feed into the Chesapeake Bay watershed in your area?** Make a map, diagram, chart, or anything else that would make it easier for others to learn this information.

**What are the *streams* that feed into the Chesapeake Bay watershed in your state?** Describe and produce a creative way of sharing this knowledge to the rest of your classmates.

**What Chesapeake Bay watershed groupings are in your state?** Describe your understanding of how they are interconnected.

Each team member gets to share three unique facts about the Chesapeake Bay watershed and how it is essential to your chosen state. **What are the three things you think others should learn about it?** Give a detailed explanation as to why you think they are important. Remember, all the details presented by your group need to be different. Please make sure to have a group discussion about each group member's facts.

Group Consensus – **After discussing what you have learned about your state regarding the Chesapeake Bay watershed, decide what the top five bodies of water are in the Chesapeake Bay watershed area in your state and explain why.** Explain what you learned and why you think others should have this knowledge.

# Lesson 2: How do human actions affect this natural resource?

## Vocabulary

When studying a new topic, it makes it more interesting when you know some of the key words used in that subject. Using websites about the Chesapeake Bay watershed, find the definitions to the following words.

* contaminants
* dead zone
* ecosystem
* nitrogen
* non-point source pollution
* point source pollution
* phosphorus

## Activity

The Chesapeake Bay watershed is an incredible water resource to millions of people. In this activity, you will take on the role of USGS scientists trying to help find solutions to the Chesapeake Bay watershed's pollution issues. You get to explain your understanding of the issues affecting this vital resource and try to develop solutions.

**My group gets to research the following Chesapeake Bay watershed pollution topic:**

**Design a public service announcement (PSA) poster to help your local citizens understand the essential components of your pollution issue.** Research other public service announcements and discuss what they include and how they use specific words, arts, charts, etc., to get your message across. Write down notes to use on your plan and create a rough sketch. Once your teacher approves the rough sketch, make a final poster and be ready to present your ideas and approach to your PSA.

Type the following words on your search engine: *“Public service announcements poster for kids about \_\_\_\_\_\_\_\_ pollution.”*

These samples can help you get ideas. Use these only as a reference. Your poster should be a new and unique idea. Write down ideas that you think would work for your public service announcement poster.

Public service announcement (PSA) notes:

**On a sheet of paper, design an illustration of how your pollution topic affects the Chesapeake Bay watershed.** Produce a creative way of sharing this knowledge to the rest of your classmates. Write down ideas of what you can include to make this illustration interesting.

**What are the three most interesting facts about your pollution issue and how it relates to the Chesapeake Bay watershed?** Why do you think others should learn these facts? Give a detailed explanation as to why you think they are important.

Group Consensus – **You are a USGS team of scientists researching a pollution issue in the Chesapeake Bay watershed.** Your teacher will give you a choice of six topics (stormwater runoff, chemical contaminants, agriculture, air pollution, wastewater.) Your team will become experts in your chosen subject and prepare a presentation with your findings explaining what you learned and why you think others should have this knowledge.

After discussing what you have learned about causes of pollution for the Chesapeake Bay watershed, decide the three major issues regarding your topic. Discuss as a group and choose possible solutions to your pollution issue. Your job is to convince the citizens of this region that this pollution issue needs to be taken seriously. Additionally, you need to develop an engineering solution to this problem. Use research to come up with possible solutions to your problem.

# Lesson 3: Oysters – Nature’s Cleaners

## Activity: Video Analysis

What did you find most interesting about the **Get Your Feet Wet: Oysters** video?



What did you find most interesting about the **Oyster Filtration Demonstration** video?



## Vocabulary

When studying a new topic, it makes it more interesting when you know some of the key words used in that subject. Using websites about the Chesapeake Bay watershed, find the definitions to the following words.

* aquaculture
* biodiversity
* bivalve
* ecosystem
* environment
* epifauna
* habitat

## Activity: Problem Solving

The Chesapeake Bay watershed is a vital for the success of the communities in this area of our country. In this activity, you will take on the role of USGS scientists trying to create a solution for the pollution issues faced in the Chesapeake Bay watershed. We have discussed the use of oysters to clean the water in the Bay. With your team of fellow scientists, research the topic of using oysters to clean the Bay's water and prepare a presentation to educate your community about the importance of a clean Bay and the use of oysters to achieve this goal.

**What parts of the Chesapeake Bay Watershed are the most contaminated?** Using your creativity, make a map, diagram, chart, or anything else that would make it easier for others to learn this information. Use this space for notes.

Describe how humans are responsible for these polluted areas.

Air pollution is a big issue for the Chesapeake Bay watershed. Using the **Chesapeake Bay: Air Pollution** link, create a poster illustrating the four major sources of air pollution and what we can do to reduce air pollution.

Notes:

Sketch your air pollution issues poster:

* Stationary sources
* Mobile sources
* Agricultural sources
* Natural sources

You have learned about some of the pollution issues in the Chesapeake Bay watershed and how oysters can be used to clean the water in the bay. **Your mission as a USGS scientist is to research different methods to clean water pollution, develop a sketch and model of a water pollution cleaning apparatus, and develop a presentation to teach your classmates about a new way to clean water pollution.** You will be given the freedom to present your information and knowledge in any way you choose. Ensure that you cover all the essential parts of your method of the system you are discussing to clean the pollution in the water of the Chesapeake Bay.

Sketch your water pollution cleaning apparatus:

Write down the steps taken to build the model of your apparatus: