

Seminole County Water Atlas Learning Kit

Pointless Personal Pollution *Lesson Plan*

Students learn about different sources of pollution and how we can stop it.

Water Atlas Curriculum Lesson 32

Lesson Summary: Our actions and inactions are directly linked to the cause of pointless personal pollution. In this lesson, students will identify ways by which our actions contribute to this type of pollution. They will also provide ways in which we can stop this type of pollution. It has been reported that unlike many other types of pollution, WE cause this pollution, and WE can stop it.

Grade Level: Upper Elementary or Middle (Grades 4 – 6)

Time Allotted: Approximately 2 class periods (100 minutes).

Performance Objectives

References are to the Next Generation Sunshine State Standards (2007).

Science

- SC.4.E.6.3 Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.
- SC.4.E.6.6 Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).
- SC.4.L.17.4 Recognize ways plants and animals, including humans, can impact the environment.

Language Arts

- LA.6.2.2.3 The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);
- LA.7.5.2.1 Use effective listening strategies for informal and formal discussions, connecting to and building on the ideas of a previous speaker and respecting the viewpoints of others when identifying bias or faulty logic.
- LA.7.5.2.2 Analyze persuasive techniques in both formal and informal speech.
- LA.7.5.2.3 Organize and effectively deliver speeches to entertain, inform, and persuade, demonstrating appropriate language choices, body language, eye contact, gestures, and the use of supporting graphics and technology.

Prior Knowledge: No prior knowledge necessary.

Topic Overview: The Clean Water Act is a set of laws designed to keep pollution out of our water. It was created in a basic form in 1948 and has been changed several times since then, but its goals are still the same. It has been successful in reducing water pollution that comes from what are known as “point sources,” such as industrial plants or sewage treatment facilities. Because they originate at a single point, the type of pollution they create and the amount is known, which makes it possible to isolate and eliminate it.



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By contrast, “non-point source pollution” has proven to be harder to get rid of because it is generated in many different places, sometimes in relatively small amounts. However, when all pollution from non-point sources is combined, it is a significant amount.

Pollution from our homes, business and farms are major contributors to the pollution of Florida's surface and ground waters. This pollution is washed into the state's waters by rain or irrigation water. Many of our daily activities can cause this pollution and it can travel by many different routes into the ground and surface waters.

Unlike industrial pollution, WE cause this pollution, and WE can stop it. In this lesson, students will identify ways in which we can stop this type of pollution, sometimes called “Pointless Personal Pollution.”

Key Vocabulary

Florida Department of Environmental Protection

The lead agency in state government for environmental management and stewardship. The Department is divided into three primary areas: Regulatory Programs, Land and Recreation, and Planning and Management.

Groundwater

Water usually found in porous layers, or aquifers, below the Earth's surface. Groundwater can be fresh, brackish, or saline. Ninety percent of Florida's drinking water comes from groundwater. These underground supplies, however, easily can be polluted by agricultural or industrial chemicals, hazardous waste spills, landfills, leaking underground storage tanks, or saltwater intrusion.

Non-point source pollution

Surface water pollution that comes from smaller sources in developed urban and agricultural areas. These sources are so numerous and widespread that they are difficult to identify individually. The pollutants are usually carried off the land into surface waters by stormwater runoff. The first inch of stormwater runoff (the “first flush”) contains the most pollutants. Non-point source pollution also includes freshwater pollution; the salinity changes that result when fresh water runs off developed land and is flushed into a saline area such as an estuary or lagoon.

Point source pollution

Pollution with a specific, identifiable point of origin. Point sources include industrial facilities, landfills, sewage treatment plants, and mines.

Pollutant

These may include oils, greases, and other petroleum products, nitrogen and phosphorus from fertilizers and animal wastes, pesticides, garbage, heavy metals, fecal matter, and silt and sand.

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In addition to chemicals, heat from industrial and power plants can also be a pollutant (thermal pollution).

Stormwater

Water from rain, snow, sleet, or hail; it seeps into the ground or flows across the ground and is directed by a system of pipes, ditches and culverts into natural or artificial water bodies to prevent flooding.

Surface Water

Water on the Earth's surface that is naturally open to the atmosphere (such as rivers, lakes, seas, wetlands, and estuaries) and all springs, wells, or other collectors that are directly influenced by surface waters

Water contamination

Impairment of water quality to a degree which reduces the usability of the water for ordinary purposes, or which creates a hazard to public health through poisoning or spread of disease

Materials

- Computer with Internet access
- Video and still camera
- Notepads, pens and pencils

References

These documents are available in the Water Atlas Digital Library:

[Stop Pointless Personal Pollution! How Everyday Chores Can Harm Your Streams and Lakes](#)

Source: U.S. Environmental Protection Agency. 2001.

[Protect Florida's Water: Stop! Pointless Personal Pollution](#)

Source: Florida Department of Environmental Protection. 2005.

[EnviroScape Model: Exploring Watersheds and Riparian Forests](#) (lesson plan). 2011. Audubon Naturalist Society.

Other references:

[After the Storm](#) (video). 2006. U.S. Environmental Protection Agency and the Weather Channel.

[Non-Point Source Pollution Articles and Activities for Middle School Students](#). U.S. Environmental Protection Agency.

Procedure

Engage/Elicit

1. Think about your home or apartment. What sorts of activities do you use water for outdoors?

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2. Water we use or dispose of outdoors ends up in our surface waters or groundwater. What kinds of substances might be in this water that could cause Pointless Personal Pollution?
3. When rain falls on our yards, driveways, and roads, it soaks into the ground or runs into storm sewers, which carry it to rivers, lakes or retention ponds. What pollutants might it pick up in the process?
4. Using the [Advanced Mapping Tool](#) on the Seminole County Water Atlas, find the watershed where your home or your school is located. Turn on the “Impaired Waters” map layer. What water bodies (lakes, rivers, ponds) are closest to it? Are they considered “impaired” or not? If so, what kind of pollution is harming them?

Explore

Students will work in small groups of 3-4 to explore different resources to create a commercial to bring public awareness to pointless personal pollution.

Tell Students: “Imagine that you’re a natural resources specialist at the Florida Department of Environmental Protection. One part of your job is to spread the word about environmentally responsible behaviors, with the goal of reducing or eliminating *Pointless Personal Pollution*. You and your production team have been asked to create a television commercial that does this.

“In preparation for creating your commercial, read these articles, and then think about how to best ‘package’ your message.”

Print out these two information pieces below and hand them out to students. They can be found in the [Water Atlas Digital Library](#). (You may wish to provide additional resources as well.)

- [Stop Pointless Personal Pollution! How Everyday Chores Can Harm Your Streams and Lakes](#)
- [Protect Florida’s Water: Stop! Pointless Personal Pollution](#)

Message Content: Using information from the above documents, instruct students to list some of the environmentally responsible behaviors mentioned in the articles that they want to include in their commercial.

Setting Up the Commercial: Tell students to consider the setup of their commercial. How can they get the information out in a way that it is interesting, entertaining and informative? What setting will they use for their commercial? Who will their spokespeople be?

Planning the Media Campaign: Ask students to decide where they might show their video so that it will be the most effective? At whom is their commercial aimed? What demographic (age group, income level, special interest group) would be the best target?

Explain

Writing the Script: Now that students have thought through the message they want to get across, the setting of their commercial, and their targeted audience, they are ready to write its script. Remind them to include the behaviors they listed, and to write so that the targeted audience will find the message interesting and understandable.

Extend

1. Lead the class in a “preliminary review” of student project plans to get feedback everyone in the class, with each group giving a short summary by providing just the following information:
 - a. At whom is the commercial targeted?
 - b. What behavior(s) does the commercial attempt to change? How?
 - c. What strategy will be used to make the commercial interesting to the target audience?
 - d. Encourage students to offer suggestions for the improvement of each project as it is presented. Each group may elect to accept the suggested changes for their commercial or not, as they wish.
2. Use an EnviroScape® Model to increase awareness of water pollution an overall watershed concept. The model is designed to be an interactive demonstration to show how waterways flow into a larger water body, which is representative of a lake, river, bay, or ocean. The unit can be “rented” by teachers for classroom use (for free) from the Seminole County Environmental Protection Divison and comes complete with a kit containing everything you need to demonstrate the movement of water through a watershed and the pollution that runoff may cause. (See references for rental information and a lesson plan.)

Exchange/Evaluate

1. Students should incorporate any suggestions they find helpful, then present their revised commercial to the class. They may wish to act it out as a live skit in class, or to record it as a video.
2. Students should be evaluated on their ability to incorporate useful information into the commercial, and their ability to make convincing arguments for behavioral changes.