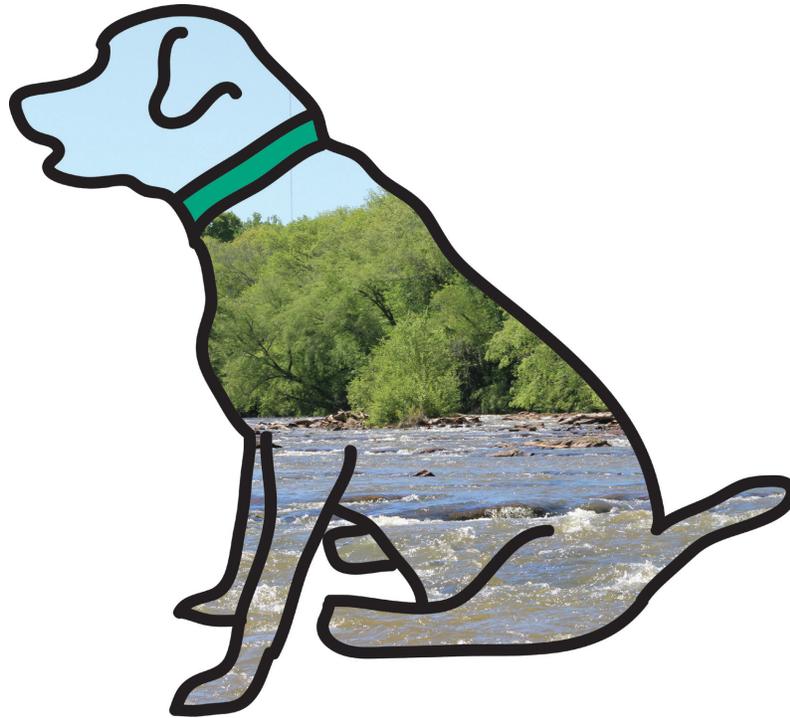# Stop Poo-llution

Pooper Scooper Relay

This activity allows students to learn how pet waste enters our waterways and the negative impact it can have on water quality. Students will understand the importance of cleaning up after pets and the best way to dispose of their waste.

For grades K - 6

Created by the Athens-Clarke County Stormwater Management Program

Lesson Summary

Through this basic lesson/relay, students will learn how pet waste enters our waterways and the negative effects it can have on water quality. After the lesson, they will understand the importance of cleaning up after pets and the best way to dispose of animal waste.

After a brief lesson and discussion, students will become "pooper scoopers" and are tasked with picking up after many dogs have gone to the bathroom in their yard. Fake dog poop, plastic bags, and trash cans are used to demonstrate the proper way of picking up and bagging dog poop.

Objectives

- Students will learn that stormwater runoff is the number one source of water pollution.
- Students will learn about common water pollutants, including animal waste, litter, excess fertilizers and pesticides, oil, and sediment.
- Students will learn how dog waste enters our waterways.
- Students will learn briefly about fecal coliform bacteria.
- Students will learn how to safely and cleanly pick up after their dogs.
- Students will learn several simple ways for humans to reduce their impact on water quality.

GSE Science Major Concepts

1st Grade:
S1L1. Obtain, evaluate, and communicate information about the basic needs of plants and animals.

2nd Grade:
S2E3. Obtain, evaluate, and communicate information about how weather, plants, animals, and humans cause changes to the environment.

3rd Grade:
S3L2. Obtain, evaluate, and communicate information about the effects of pollution (air, land, and water) and humans on the environment.

4th Grade:
S4E3. Obtain, evaluate, and communicate information to demonstrate the water cycle.
S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem.

Materials

- Fake dog poop (can be provided by the Stormwater Management Program)
- Plastic bags
- 2 trash cans

Background Information
This activity focuses on stormwater runoff and the effects of bacteria from animal waste on water quality.

Stormwater runoff and household pollutants
Stormwater runoff is rainwater or snowmelt that flows over the ground. In natural areas, most rainwater soaks into the ground, because the ground is pervious, allowing water to pass through it. In developed areas, the ground is hard and impervious, which prevents stormwater from infiltrating, resulting in runoff.

As runoff moves across the landscape, it can pick up many different pollutants. In Athens-Clarke County, when runoff enters a storm drain, it carries those pollutants directly from the streets and sidewalks to the streams and rivers. There is no stop for treatment. Some common pollutants include:

- **Sediment.** Sediment can cloud the water and harm aquatic plant and animal life. Sediment also presents points of nucleation for bacteria, promoting the growth of harmful bacteria.
- **Bacteria and pathogens.** Present in animal waste, bacteria and pathogens can enter the stream through septic tank leaks, pet waste and wild animal waste. Once there, the bacteria can make the water unsafe for recreation and drinking.
- **Nutrients.** Found in fertilizers and animal waste, plant nutrients such as nitrogen and phosphorous can cause problems. Once in the stream, nutrients promote algae growth, resulting in algal blooms and the disruption of aquatic ecosystems.
- **Litter.** Trash and dumped items can suffocate, choke or otherwise harm aquatic animal life.
- **Household chemicals.** Soaps, pesticides, paints and other commonly used household chemicals can enter streams and rivers and poison aquatic life.

Fecal Coliform Bacteria
Bacteria from animal and human waste is the most common pollutant of our waters here in Athens.

Fecal coliform bacteria is found in the digestive tract of warm-blooded animals, including humans, and is discarded in their waste. Although most coliform bacteria do not cause disease, there are some rare strains or E. coli that are known to make humans and animals sick. We do not want this type of bacteria in our drinking water sources, as they are hard and expensive to treat. Most bacteria is disinfected and filtered out during treatment before it gets to the tap for humans to drink, but this bacteria is harmful for aquatic animals as well. This bacteria is often used as an indicator of poor water quality.

Picking up after dogs, fencing off cattle or other livestock, properly maintaining septic systems, monitoring for sewer leaks, and keeping natural stream buffers in tact are some things we can do to prevent this bacteria from getting in our water.

Set-up

This activity should be done outside and works best in a large field or play area. All materials can be borrowed from the ACC Stormwater office.

You will set-up two different relay lines. Each relay will have a trash can and a bunch of plastic bags to mark the starting point. Students will line up behind the trash cans. Fake dog poop should be spread out on the grass at least ten feet away from the trash cans. Students will grab a plastic bag, run to the dog poop, scoop the poop, then run back and place it in the trash can.

Procedure

Start a discussion about stormwater. Ask the students what happens to rain when it hits the earth. The students should generate a list that includes soaking into the ground, going into a river, or hitting infrastructure or homes. Discuss what happens to the water when it soaks in [becomes groundwater, gets used by plants, can evaporate in evapotranspiration]. Then ask what happens to the water when it runs off the ground [picks up pollutants, can heat up, goes into a storm drain and enters the water quickly]. Ask students to compare/constrast stormwater in natural areas and urban ones [what happens when it rains on top of a forest vs. what happens when it rains on top of a parking lot].

Ask students to name pollutants that runoff can pick up and explain how those pollutants harm the ecosystem and affect humans. Fill in the gaps of their list with pollutants from the background information. For older grades, ask students to explain what can happen when multiple pollutants enter our waters [algal blooms and warm water can both lower dissolved oxygen, harming fish, for example]. When someone mentions dog poop, ask "how many of you have dogs at home?" Continue to ask questions about whether or not they take care of their dogs, pick up after them on walks, pick up after them in their own yards, etc. Mention that animal waste contains lots of bacteria, including fecal coliform bacteria, and if it's not picked up, it can wash into a storm drain or nearby creek. This bacteria can potentially be harmful for human and animal life. Use the notes in the background information section to supplement this discussion.

To begin the relay, split the students into two groups and line each group up behind the trash cans. Instruct the students that they are competing with one another to pick up the most dog poop. One by one, they must run and pick up one pile of poop, properly bagging it (using the inside-out bag technique) and running back to dispose of it in the trash can. The team with the most bagged poop at the end wins.

Assessment

In the closing discussion, students will be asked the following questions:

• What are the different types of water pollution and how do they enter our waterways?
• Why is pet waste and other bacteria harmful for water quality?
• Why is it important to pick up after our dogs?
• How should we dispose of dog waste?