STORM DRAIN DETECTIVES

To protect land and water, it is important to understand how water flows from roofs, driveways, and lawns and into storm drains and eventually local water sources. Impervious surfaces are those that prevent water from naturally soaking into the ground and include sidewalks, driveways, streets and roofs. Water flows over impervious surfaces and into the sewer system through storm drains, often carrying pollution with it. Pollution can be nutrients from leaves, grass clippings, pet waste or fertilizers, which cause algae growth, dirt that can impact aquatic habitats, bacteria, and trash. Storm drains connect to local water sources such as streams or lakes which can be contaminated with pollution from runoff. There are many ways to prevent water from running off, including permeable pavers, rain gardens, ran barrels and native plants that can infiltrate water. In this activity, participants will search for impervious and permeable surfaces and mark storm drains.

Outcomes

- Participants will learn how rain that runs down storm sewers drains directly into nearby lakes and rivers, taking pollutants and excess nutrients with it.
- Participants will act as detectives scanning the area around your program site for trouble spots and opportunities.

Audience

Youth (ages 8+)

Time

40 – 60 minutes (less time for Part One only)

Concepts

- Our streets connect directly to rivers and lakes.
- Hard (or impervious) surfaces allow rain, also called storm water, to quickly take pollutants from the streets into rivers and lakes.
- Helping water soak into the ground next to houses and other buildings helps prevent water pollution.

Supplies

- Cookie sheet or other hard, flat surface that water can't soak into
- Large bowl (clear glass is ideal), bucket, or other container for water
- Spray bottle of water
- Small bits of paper and other items representing pollution, such as vegetable oil
- Piece of green felt, or a slightly damp sponge or cloth
- Notebooks or paper
- Pens/pencils

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Preparation

Prepare materials. Adult or youth leaders may want to do an initial scan of the area around the program site in preparation for Part Two.

Procedure

Part One

- Ask participants where they think water and any pollutants, leaves and litter go when they flow into a storm drain (sewer) in their street. Explain how our streets connect directly to rivers, lakes, and wetlands via storm drains and a system of underground pipes. Provide participants with information or have them each research what body of water storm drains in the area flow to.
- Demonstrate how rain runs off hard surfaces, carrying litter, leaves, grass clippings and pollutants with it into rivers and lakes.
- Hold a cookie tray (representing hard surfaces like roads, parking lots, roofs, etc.) at an angle over a bowl (representing a body of water such as a lake) and spray with water (representing rain or melting snow). Explain how the rain runs off the hard surface into the "lake" (bowl). Ask participants for examples of hard surfaces that allow water to run off.
- Add "pollution" to the hard surface, such as bits of paper (for liter), vegetable oil (for motor oil) or colored water (lawn chemicals). Repeat the "rain" and watch the pollution run into the lake (bowl).
- Add a piece of green felt or a damp sponge/cloth to the hard surface and repeat the rain, watching the "natural area" absorb some of the rain. Ask participants what the felt or sponge represents (gardens or other areas rain can soak into the ground.)

Part Two

- Explain to participants that they are going to be detectives uncovering how rain water gets from the program site to rivers, lakes, or wetlands, looking for trouble spots and opportunities. Take participants outside with notebooks and pens. Ask small teams to investigate a specific area (e.g., the block you are on) and decide:
  1. How does rain water drain off the roofs?
  2. How does rain water then get to the streets?
  3. If it rained today, what kind of pollution would be taken by the rain water into the streets?
  4. Where in the streets does the rain get to the drains (and then to rivers and lakes)?
  5. Does rain water soak into the ground anywhere on its way to way the street?
- Go through the participants' answers to 1 through 5 above. You could award a prize for the group that identified the most trouble spots and the most opportunities. Ask participants for their ideas for ways to reduce pollution and help more water infiltrate into the ground. Can they implement any of their ideas?

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Discussion questions

- What are some of the streams, rivers or lakes nearby where rain water goes when it goes down the storm sewer? Did you know pollution from the street is washed into these places?
- What is the problem with pollution being washed into lakes and rivers? (It pollutes the water we use for drinking and recreation and negatively impacts plants, fish, birds and other wildlife.)
- Does a lot of rain water soak into the lawn? (More than on pervious surfaces, but most of the water will run over grassy areas because the soil is very compacted and the short roots of most turf grasses do not create channels in the soil for rain to soak into.)
- What can kids and adults do to reduce water pollution? (Some ideas to review include: pick up litter and pollutants, don't sweep leaves and grass clippings into the street, direct downspouts into the lawn or garden, capture rain water in a barrel, replace some turf grass with deeper-rooted plants.)
- What else do you know about pollution that we haven't talked about?
- What did you learn that you want to share with someone else? Who will you share it with?
- What more do you want to learn about?

Additional activity ideas

Brainstorm ideas and conduct research

Pursue ideas that came up during the participants' brainstorm about ways to reduce pollution and help more water infiltrate into the ground. If leaders don't know if the ideas are on-track or feasible, have participants conduct research using the recommended websites at the beginning of this chapter.

Measuring impervious surfaces and volume of water

- Have older youth measure the area of the parking lot or other impervious surface near the program site and calculate the volume of water running off the surface. Detailed instructions can be found at: ***www.sjrwmd.com/education/lessonplans/allmessedup.html.***