

# Unit 3: POLLUTION- KEEP IT CLEAN ACTIVITY 1



## WHAT'S THE BIG DEAL?

### Directions:

Have you ever had a strong opinion about something and ended up in an argument with a friend? You start explaining your position but you cannot get anywhere because you do not have any “proof,” data or scientific fact to back up what you are saying. It is frustrating. Alternatively, how many times has someone spouted data or numbers at you with no position attached to it. Without a supported argument, these numbers have relatively little meaning.

Think about each of the following scenarios and write down how you might respond to each situation. Describe what you think might be wrong with the situation and how it might impact the environment. How would you support your argument? Alternatively, try making an argument in favor of the situation, what would your friend say?

Fill in your response to the following scenarios:

### PAINTING THE HOUSE

You and your friends just finished staining a deck for your neighbors. You are psyched to be done because you wanted to meet your friends at the mall that afternoon. You have half a can of stain left over and you are not sure what you should do with it. You do not want to wait around for your neighbors to come home. Your friend suggests pouring it down the storm drain and throwing out the can. **What’s the big deal?** \_\_\_\_\_



### POOPER SCOOPER

You and your friend started a business of poop-scooping people’s lawns for the summer. It seemed like a good idea at the time, but now hauling bags of poop around is just too much. Your friend suggests throwing the poop into the hilly open space and creek next to the house you are working on.



**What’s the big deal?** \_\_\_\_\_

### DOWN THE DRAIN

You and your friends have started a landscaping company to make some extra money. You complete tasks such as weeding, raking, fertilizing, applying pesticides, cutting and sprinkling the yard. You’ve just begun mowing your first yard when you realize you have run out of bags to collect the clippings and yard waste. Your friends suggest dumping the grass clippings into the storm drain, saying “It’s okay, it’ll get washed down.” **What’s the big deal?** \_\_\_\_\_

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## BACKGROUND INFORMATION

### WHERE DOES THE WATER THAT FLOWS INTO STORM DRAINS END UP?

Water from yards and driveways runs directly into streets and down storm drains. Storm drains empty water into local creeks and streams, not into a water treatment plant!

### WHAT IS POINT SOURCE POLLUTION VS. NONPOINT SOURCE POLLUTION?

Point source (PS) pollution can be traced to a *specific source* such as industrial waste from a manufacturing plant or sewage from a broken pipe. Nonpoint source (NPS) pollution occurs when rainfall, snowmelt or irrigation runs over land, picks up pollutants and deposits them into our creeks and streams (or ground water). We can all make a difference by limiting NPS pollution.



## POLLUTION AND ITS IMPACT

Pollution	Sources	Impact	Consequences
Sediment	Construction/Development	Soil particles fill up streams and lakes and block light in water.	Animal and plant habitats disappear.
Nutrients	Grass Clippings/Leaves	Byproducts, including phosphorus and nitrogen, feed aquatic plants and create algal blooms, clogging creeks and streams. Microorganisms eat the increased organic matter and use up vital oxygen.	Reduction of animal habitat. Loss of available oxygen causes death of fish and other aquatic animals.
	Excess or Spilled Fertilizer		
	Animal Waste		
Bacteria	Animal Waste	Bacteria affects water quality and can make animals, humans and other aquatic life sick.	Human sickness, as well as animal sickness and death, can result.
	Improper Sewage Disposal		
Toxins	Paint Dumping	Toxins affect water quality and have unknown effects on animal and human health. Toxins are basically poisons. They can affect the neurological and biological systems of animals and humans, as well as damage or kill aquatic plants and life.	Can kill animal and aquatic life and affect reproductive abilities. Harms wildlife habitat.
	Pesticides/Herbicides and Solvent Dumping		
	Improper Disposal or Spills of Oil and Gasoline		



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H2O GO!

## BACKGROUND INFORMATION (CONT.)

Pollution can make water unsuitable for drinking, recreation, agriculture and industry. Polluted water also diminishes the aesthetic quality of lakes and rivers. Contaminated water will eventually threaten human health and animal life.

POLLUTION - WHAT DOES LAND USE HAVE  
TO DO WITH IT?

Land uses affect pollution runoff differently. The upper Boulder Creek and St. Vrain watersheds consist primarily of forest, shrubs and alpine tundra, while the lower watersheds consist of grassland, agricultural land and urban developed land. Water quality declines as it moves downstream from high-elevation headwaters. As Boulder Creek or St. Vrain Creek progresses, diversions remove water, population density increases, and potential contaminant sources, including wastewater, urbanization and agriculture, increase. The population of the five largest communities in the Boulder Creek Watershed (Boulder, Lafayette, Louisville, Superior and Erie) grew by 36 percent from 1990 to 2000. Imagine how the increased population impacts our water!



"KEEP IT CLEAN, 'CAUSE  
WE'RE ALL DOWNSTREAM!"

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H2O GO!

Ways to reduce NPS  
pollution and protect our  
waterways:

- Reduce excess water runoff and water waste by watering lawns only when necessary. Do not water hard surfaces, such as sidewalks and driveways.
- Use buckets and sponges to wash pets and cars.
- Keep downspouts pointed away from hard surfaces.
- Rake and bag or compost leaves and clippings or use them as mulch.
- Collect all animal waste and deposit it in the garbage.
- Minimize the use of fertilizers and pesticides and keep them off of driveways and sidewalks.
- Keep litter and garbage off the streets and away from storm drains.
- Properly dispose of any automobile waste, such as oil and antifreeze. Keep the car and lawn mower tuned to minimize this pollution.



## BACKGROUND INFORMATION (CONT.)

In urban areas, *non-permeable* surfaces such as pavement and hard cover on the ground (streets, parking lots, roofs, etc.) prevent rain and snowmelt from soaking into the soil. Contaminants from human activities settle and remain on non-permeable surfaces until a storm washes them, untreated, into storm drains. When rain and snow cannot soak into the ground, it increases the volume of water that enters streams rapidly—eroding banks, damaging stream-side vegetation and widening stream channels. Businesses or shopping centers typically have 95 to 100 percent hard cover (non-permeable), while



open park areas have 0 to 10 percent hard cover. An area with 75 to 100 percent paved surfaces cause 55 percent runoff vs. 10 percent runoff in an open area. Underground water storage (aquifers) also decreases when water cannot soak into the ground, which in turn can affect water levels in lakes, streams and wetlands.

## Quick Drip Tip

A successful way to combat NPS pollution is to bring awareness to your community that storm drains lead to local waterways. Join a local storm drain marking effort to help home owners understand where their runoff goes. Visit: [www.KeepItCleanPartnership.org](http://www.KeepItCleanPartnership.org).

