

Erosion Demonstration

Materials: Paper Plate
Cookies or Crackers
Toothpick
Straw
Water Dropper & Water
Gummy Worms (or other gummy candy)



Procedure:

1. Place a few cookies or crackers on your paper plate to represent the land.
2. Use the straw to blow on the cookies. This simulates the wind blowing over your land.
3. Now poke the cookies with a toothpick to simulate birds and animals pecking and poking around the ground or maybe human activities that would loosen your soil.
4. Now blow with the straw again. This is wind erosion.
5. Add a few drops of water to simulate light rain. You can use a full dropper to simulate heavier rain or flash flooding. This is water erosion.
6. Place a gummy worm or two around the edges of your eroded cookie. This represents an erosion control structure, similar to a wattle, rip-rap, or hay bales.
7. Try simulating a rainstorm one more time. What happened?
8. Discuss your observations and what you learned about erosion and erosion control practices.

What is Erosion?

Erosion is a natural process that occurs when soil, rocks, and other materials are worn away by wind, water, and other forces. Sometimes, it is a slow process that happens over long periods. Other times, like when our rural areas or recently burned areas get flash flooding, it can happen very quickly. However quickly it happens, it can have a big impact on the environment.

Potential Impacts on the Environment:

- Removes topsoil, where plants get their water & nutrients from.
- Habitat destruction from loss of soil structure (on land) and filled in spawning beds and increased temps from particles (in water).
- Sedimentation of streams/rivers/lakes = clogged waterways, increased turbidity (cloudiness), and reduced water storage capacity.
- Desertification – turning fertile land into arid (dry) land with no vegetation cover. This degraded land loses its ability to hold water, increasing surface runoff and leading to more frequent flooding and significant erosion.
- Increased pollution – turbidity, pesticides/herbicides, nutrient-loading from fertilizers, bacteria/nitrates (from livestock, pet wastes, septic), heavy metals (e.g., brake dust), fuel & oil, 6-PPD (tires)
- Reduced water quality – pollution, higher temps (from TDS/TSS), decreased O₂



Non-Point Source (NPS) Pollution – contamination that does not come from a single source (like a pipe or building). It gathers from widespread activities and is carried by rainfall or snowmelt runoff. It picks up pollutants – such as fertilizers, oil, sediment, and bacteria – and deposits them into waterways.

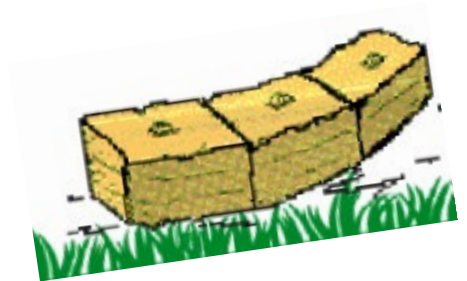
Sediment – solid material, such as sand, mud, clay, and dirt, that is transported by water, wind, or ice.

Tips for Effective Erosion Control:

- Plant deep-rooted trees, grasses, and shrubs to bind soil, and slow water runoff.
- Use riprap (rock lining) to protect banks erosive water flow.
- Sediment traps help to stop runoff and prevent solid materials, such as sand, mud, clay, and dirt from being transported into waterways and roadways.
- Create a diversion dike or use hay bales or wattles to divert excess water to places where it can be disposed of properly.
- Grade stabilization structures carry concentrated runoff down a slope.

Diversion Dike – a compacted earth ridge or mound constructed along roadways and construction site perimeters to control stormwater runoff.

Erosion Control Wattle – cylindrical tube (fiber roll) of straw, coconut coir, or wood fiber used to stabilize slopes, slow water runoff, and trap sediment.



<https://www.campoepa.com/>