



Rainwater - Let's Hold It!

Let's see where rainwater goes, what happens when there's too much, and what ALCOSAN is doing to reduce rainwater overflow.

Fun Facts/Information:

- The average rainfall in Pittsburgh is 38 inches per year.
- The average snowfall in Pittsburgh is 44 inches per year.
- When it rains or snow melts, the extra water ends up in the sewer system, causing it to overload and overflow. ALCOSAN is working on a Clean Water Plan to reduce overflows in many ways!

Learning Objectives:

- Students will demonstrate rainwater overflow and one way that overflow can be prevented.



Materials:

- 1 spray bottle filled with water
- 1 straw
- 1 small bowl or container (the smaller, the better)
- scissors
- tape
- 1 empty plastic water bottle

Safety Considerations:

- You may get wet! If you can do this activity outside, on a picnic table or patio, you won't have to worry about getting your house wet.

Procedure - Part 1:

1. Fill spray bottle with water.
2. Place the small bowl or container on a table or somewhere you don't mind getting a little wet. The smaller your bowl or container is, the better, as you will be able to see it overflow more quickly.

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3. Tape straw to edge of the bowl so that one side of the straw is over the bowl. If you have a straw that bends towards the top, make sure that side is facing away from the bowl.
4. Use the spray bottle to make it rain! Aim the spray bottle towards the straw so that as much water goes through the straw and into the bowl as possible. If you have a straw that bends, you can bend the top up to simulate a storm drain and spray the water into that end.
5. Continue spraying and watch as the bowl fills. Spray until the bowl starts to overflow. Then discuss the problems that overflowing rainwater causes.

Procedure - Part 2:

1. Now that we have observed what happens when rainwater creates overflows, we will demonstrate one way that ALCOSAN is fixing this problem.
2. Lay the plastic water bottle sideways on your table.
3. Uncap the bottle and tape the straw to the top of the bottle's mouth. As with the bowl, make sure that one side of the straw is inside the water bottle.
4. It's time to make it rain again! Again, aim the spray bottle towards the straw so that as much water goes through the straw and into the water bottle as possible.
5. Notice how this time the rainwater is filling the water bottle instead of overflowing in the small bowl.

Discussion Questions:

- What problems were caused by the bowl overflowing with water?
- What problems can occur when a big storm or lots of melting snow causes storm drains, pipes, or waterways to overflow?
- Why is it better for rainwater to flow into a larger container? (In our experiment, this was the water bottle. Similar real-world solutions include storage tanks and rain barrels.)

Extensions:

- Brainstorm other solutions for preventing rainwater overflow. Then, go to <https://www.alcosan.org/clean-water-plan/grow-program> and learn more about ALCOSAN's plan to create cleaner waterways and reduce excess water from entering the sewer system.
- Research to learn more! With a parent or adult, use the internet to research rain barrels and other types of stormwater infrastructure (infrastructure = important things like roads and pipes that allow a community to function well). There are even underground water storage containers underneath parks and playgrounds! was the water bottle. Similar real-world solutions include storage tanks and rain barrels.)