

MAKE A RIVER

GRADE LEVEL: 4 - 6

OBJECTIVE:

Students will learn how the Ohio was carved over time. They will get an understanding of how we each impact water quality.

MATERIALS:

Diatomaceous Earth (pool filter material) 10 lbs.
Plastic or aluminum tray (kitty litter size or 12" x 24" x 4" is good)
Blue and red food coloring
Paper cups (3 per group)
Water
Aerial photos of rivers and river deltas
Book or block one to two inches thick

BACKGROUND TEACHER INFORMATION:

The Ohio River was not always there. About 387 million years ago, much of Indiana and surrounding states lay submerged under a warm tropical ocean. Huge fish called arthrodiras swam around in the marine environment. After a vast period of time that included the uplift and erosion of the Appalachian Mountains to the east and a more recent "ice age" to the north, the river was formed. It was created when glaciers blocked the flow of north-flowing rivers. These rivers backed up and flooded until they breached valley walls. Eventually they carved into the landscape creating the path that is now the Ohio River. The Teays (pronounced Tays) River was the pre-Pleistocene river drained parts of eastern U.S. similar to the Ohio, except it included parts of Michigan and northern Illinois and excluded Tennessee and Alabama.

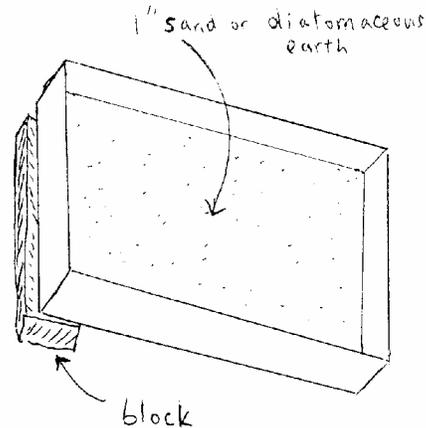
Today the Ohio River stretches some 981 from Pittsburgh, Pennsylvania to Cairo, Illinois. About 10% of the U.S. population lives in the Ohio River basin.

Rivers are never in a straight line. They meander and curve back and forth always finding the path of least resistance as they flow toward sea level.

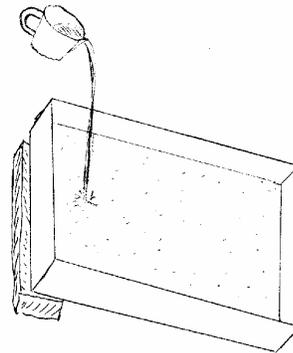
PROCEDURE:

The following investigation can be a bit messy. It is a good idea to put down newspapers on the desks and tables.

1. Each group needs: tray with enough diatomaceous earth to cover the bottom one inch deep, one paper cup with water, one paper cup with blue water, and one paper cup with red water.
2. Have students pack the sand into the tray about one inch deep. Add some clean water to help pack down the sand. The sand represents land without rivers.
3. Next, have one student tilt the tray up with a book or wood block to create a slight slope. (See illustration below.)



4. To create the river, have a student slowly drip the blue water onto a spot at the highest end of the tray. (See below.) It is important to pour the water at the same spot rather than moving



around. Remind the students that water always flows by gravity to reach sea level. The low end can represent sea level. The water will move the sand in a meandering (curving) path. Continue to pour water until a “river” has covered the length of the tray. Ask students to describe the river’s appearance. Examine aerial photos of rivers and river deltas. Do they see any similar features?

5. The second part of the investigation demonstrates how water quality is effected by outside factors. A watershed is the land on both sides of a river and all of the water stored in the soil. Rain, wastewater and any other liquids that cannot be absorbed by the land is filtered by the soil before it gets into streams. A lot of water is stored in the soil. Other is stored in the sand and gravel in the river’s flood plain – called the aquifer. This is the water that we find when we drill a well.

We all play a role contributing to the water quality of the Ohio River. Any wastewater or other substance that we allow to get into the water pollutes it; makes it unfit to drink; unfit for fish to live in and unfit for other animals to use.

Take the red-colored water and pour it from a different spot on the tray. Where did the red water go? What color is the water at the vase of the river you just created? What happens when the red water flows into the river? The color change represents the now polluted water. Ask students to name some things that can pollute our waters/ Any foreign substance that goes into the water can be a pollutant. For example, if you change the oil in your car and don’t dispose of it properly, the oil could end up in the river. Other pollutants include animal waste from feedlots, chemical run-off from fertilizers and spills from ruptured pipelines.

EXTENSIONS:

Follow-up this investigation with a visit to your local water company.

Check out the Louisville Water Company web site at www.louisvillewater.com/home.htm, click on the “Funzone” to learn more about the Ohio River and drinking water.



Aerial view of the Falls of the Ohio



A historical photo showing a paddlewheel towboat pushing its load on the Ohio River before the age of the diesel engine.



*River bends at the old lock and dam 46, one of the old wicket dams at Owensboro, Kentucky (ca. 1930).
(All images on this page are courtesy U. S. Army Corps of Engineers)*