

2017 River REACH Program
High School Curriculum

PRE-TEST



Name (optional) _____ Today's Date _____

School _____ Grade _____

Class _____ Teacher _____

Was this your first time participating in this river research cruise with us? Yes No (Circle One)

1. What is a watershed?

- A. A place where groundwater can be accessed for drinking water and other uses.
- B. The amount of water stored in a river, lake, or stream.
- C. The total area of land that drains into a river, lake, stream, or other water body.
- D. A place where water is stored by industries for use in processing goods.

2. Contour lines on a topographic map are used to show:

- A. Elevation above sea level.
- B. Population changes.
- C. Temperature.
- D. None of the above.

3. You can define the boundaries of a watershed on a topographic map by looking at which of the following?

- A. Where vegetation is located.
- B. The highest elevations located around a body of water.
- C. The distance between streams and roads.
- D. The banks of a stream, river, lake, or other water body.

4. Which of the following factors influence water quality in rivers, lakes, and streams?

- A. Precipitation.
- B. Vegetation and ground cover.
- C. Land use activities in the surrounding watershed.
- D. All of the above.

5. How can removing trees and vegetation from land affect water quality in nearby waterways?

- A. Water quality may worsen as more loose sediment is washed into waterways during rain events.
- B. Removing vegetation from land never affects water quality.
- C. Water quality would improve as water more quickly reaches waterways when it rains.
- D. It would have little impact on water quality since most pollution come directly from industry.

6. Which of these is an example of **POINT-SOURCE** pollution?

- A. Antifreeze washing off a parking lot into a nearby stream.
- B. A marina discharging untreated sewage from a holding tank directly into the Ohio River.
- C. Pesticides carried by rainwater from a yard into a nearby stream.
- D. Trash strewn on the side of the road.

7. Which of the following is **NOT** a designated use of the Ohio River?

- A. Contact Recreation (Swimming, boating, water-skiing, etc.).
- B. Trash removal.
- C. Drinking water source.
- D. Aquatic Life Support.

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8. Which of the following is a benefit of using barges instead of tractor trailer trucks (semis) to transport goods?

- A. Barges are smaller and take up less room than tractor trailer trucks.
- B. A 15 barge tow can transport as much cargo as 870 semi trucks, resulting in less fuel usage and air emissions.
- C. Barges provide unlimited access to farming and mining communities.
- D. Barges run on wind power and do not require fuel.

9. The drinking water intakes for Cincinnati and Northern Kentucky are both located on the Kentucky side of the river upstream of the metro area. Why?

- A. They are closer to combined sewer overflows (CSO), which are used to treat the contaminated water.
- B. They are located at a point bar, because the water is shallower and can be more easily accessed.
- C. They are located further away from barge traffic.
- D. They are located at a cut bank, because the water is deeper and should have less sediment.

10. Which of the following water quality conditions could be harmful to aquatic organisms?

- A. A pH of 3.
- B. A dissolved oxygen reading of 8mg/L.
- C. A water temperature of 16° C (62°F).
- D. Options A., B. and C. are safe for most fish.

11. Which of the following reasons explains how zebra mussels, which are invasive species, can be detrimental to the Ohio River?

- A. As proficient filter feeders, they out compete native mussels for food.
- B. They can cause blooms of cyanobacteria.
- C. They can clog intake pipes of water treatment plants.
- D. All of the above.

12. What pollutants are most likely to cause algal blooms in our waterways?

- A. Fertilizers from lawns and farms.
- B. Animal waste, such as cow manure.
- C. Old tires and trash dumped into the river.
- D. Both A. and B., but not C.

13. *E. coli* is a bacteria found in the guts of humans and warm-blooded mammals. Which of the following is a likely source of *E. coli* contamination in the Ohio River?

- A. Sediment washing off from a construction site.
- B. A combined sewer overflow (CSO) discharge.
- C. Oil leaking from a boat.
- D. Trash washing into the river from a storm sewer.

14. How can high turbidity levels harm aquatic life in the Ohio River?

- A. The sediment in highly turbid waters can clog the gills of fish and invertebrates.
- B. Sediment in highly turbid waters can absorb sunlight and raise the temperature of the water.
- C. Some fish may have difficulty spotting prey in turbid waters.
- D. All of the above.

15. Which of the following types of food webs indicates a healthy river ecosystem?

- A. A simple food web with few species and few connections.
- B. A food web that only contains producers.
- C. A food web that excludes humans.
- D. An intricate food web with many species and many connections.

16. Which of the following reasons explains why scientists study macroinvertebrates to determine water quality conditions?

- A. All macroinvertebrates spend their entire lives in the water and, therefore, always feel the effects of pollution.
- B. Certain species of macroinvertebrates are intolerant to pollution while others are tolerant to pollution.
- C. Macroinvertebrates are fairly easy to catch from the Ohio River using Hester-Dendy plates.
- D. B and C only.

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17. If you were sampling a stream for macroinvertebrates and found a majority of sensitive (intolerant) individuals, you would conclude that the water quality was:
- A. Excellent for supporting aquatic life.
 - B. Would not be suitable for aquatic life.
 - C. Not safe for swimming.
 - D. None of the above.

18. When studying fish from the Ohio River which of the following can be an indicator of poor conditions?
- A. A high number of species that are sensitive to pollution or habitat loss.
 - B. A low number of species showing physical deformities.
 - C. A high number of species that are not native to the Ohio River.
 - D. A high amount of biodiversity.

19. Where does most of the pollution in the Ohio River come from?
- A. Discharges of raw sewage from sewage treatment plants.
 - B. Illegal discharges from factories and industries.
 - C. Dumping of trash into the river.
 - D. Non-point sources, which are generally associated with land use.

20. Which of the following is NOT true of the Ohio River?
- A. The Ohio River is 981 miles long.
 - B. The Ohio River is formed by the confluence of the Allegheny and Monongahela Rivers in PA.
 - C. The Ohio River is home to only 13 species of fish.
 - D. The Ohio River is a drinking water source for over five million people.

Please list 5 words that describe what YOU think about the Ohio River.

1. _____
2. _____
3. _____
4. _____
5. _____

Please list 5 things you will do to minimize pollution in the Ohio River.

1. _____
2. _____
3. _____
4. _____
5. _____