

the Water Brothers **EPISODE GUIDE QUESTIONS**

DEAD ZONES

- 1. What is a Dead Zone?**
- 2. Are Dead Zones formed naturally or are they man-made?**
- 3. What is the leading contributor to the formation of Dead Zones?**
- 4. Name a major source of nutrient pollution that causes Dead Zones and algae blooms.**
- 5. What two nutrients used in farming practices cause algae blooms to form?**
- 6. Describe how nutrients from farms create Dead Zones.**
- 7. At the mouth of which river is the second largest Dead Zone in the world found?**
- 8. How many fish were killed in just one day by an algae bloom in the Gulf of Mexico?**
- 9. How large is the Dead Zone in the Gulf of Mexico?**
- 10. How many Dead Zones are there in the world?**
- 11. True or False: Can certain types of algae blooms make humans sick?**
- 12. What is one type of farm that The Water Brothers visit that has less nutrient runoff?**

DEAD ZONES

- 1. What is a Dead Zone?** A dead zone is an area in a body of water (lake, ocean) with low oxygen levels.
- 2. Are Dead Zones formed naturally or are they man-made?** Dead Zones can form from natural factors and human activity.
- 3. What is the leading contributor to the formation of Dead Zones?** The leading contributor to the formation of Dead Zones is the rapid growth of large scale, intensive agriculture and the concentration of animal manure in factory farms.
- 4. Name a major source of nutrient pollution that causes Dead Zones and algae blooms.**
One major source of nutrient pollution that causes Dead Zones and algae blooms is untreated live stock waste (untreated manure) from farms. This is often associated with factory farm operations that concentrate large numbers of animals, and their manure in confined areas.
- 5. What two nutrients used in farming practices cause algae blooms to form?** Phosphorus and nitrogen cause algae blooms to form.
- 6. Describe how nutrients from farms create Dead Zones.** When nutrients are overloaded into waterways, they create algae blooms. When the algae die and sink to the bottom, bacteria breaks down the algae and consumes almost all the oxygen in the water. This process creates a Dead Zone.
- 7. At the mouth of which river is the second largest Dead Zone in the world found?** The second largest Dead Zone in the world is found at the mouth of the Mississippi River, in the Gulf of Mexico.
- 8. How many fish were killed in just one day by an algae bloom in the Gulf of Mexico?** In just one day, over a million fish were killed by an algae bloom.
- 9. How large is the Dead Zone in the Gulf of Mexico?** The Dead Zone in the Gulf of Mexico covers 15,000 square kilometers every summer. It is the second largest Dead Zone in the world.
- 10. How many Dead Zones are there in the world?** There are more than 400 Dead Zones in the world.
- 11. True or False: Can certain types of algae blooms make humans sick?** True. Certain types of algae blooms can make humans very sick. There have been deaths in Asia, South America and Africa from algae blooms.
- 12. What is one type of farm that The Water Brothers visit that has less nutrient runoff?**
Free-range farms have less nutrient runoff than a typical farm. Unlike factory farming of livestock, when animals are raised in free-range conditions their manure is naturally cycled into the land. This reduces the amount of nutrient runoff in the surrounding watershed.

DEAD ZONES

Dead Zones

- <http://oceanservice.noaa.gov/facts/deadzone.html><http://education.nationalgeographic.org/encyclopedia/dead-zone/>
- <http://www.onearth.org/earthwire/devil-deep-blue-sea>

Algae Blooms

- http://www.sciencedaily.com/terms/algal_bloom.htm
- <http://www.scientificamerican.com/article/massive-toxic-algae-blooms-may-prove-a-sign-of-climate-change-to-come/>

Nutrient Pollution

- <http://oceanservice.noaa.gov/facts/nutpollution.html>
- <http://www.dummies.com/how-to/content/what-is-nutrient-pollution-of-water.html>

Gulf of Mexico – Dead Zone

- <http://www.nature.org/ourinitiatives/regions/northamerica/areas/gulfofmexico/explore/gulf-of-mexico-dead-zone.xml>