**Who Polluted the Charles River?**

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| For many hundreds of years, people have lived on the banks of the Charles River. They hunted in the forests, harvested foods from wetlands, and caught fish in the river.  Imagine that the water in front of you was taken from the Charles River by a Native American about 400 years ago.  **How does it look to you?**  **Does this look like water that you might drink, swim in, or eat fish from?** One of the first explorers to the New England region mapped out the lands and waters that he encountered. He named the land along the river “Massachusetts”. When he returned to his home in England, he shared his discoveries with King Charles of England. King Charles renamed the river in Massachusetts after himself: The River Charles.  Soon colonists began to arrive and build towns and homes. They found fertile land for farming and a river that provided ample food, water and energy. It was an excellent environment for settlement, and the Charles River area became one of the most developed settlements in colonial America. **How do you think the colonists used the river?** *(think about things that you do with water)* **Do we use our rivers in the same way(s) today?**  The river has changed a lot since it was first explored. This is the story of those changes. Listen for the word or phrase printed on your canister. When you hear your word/phrase named, open the canister and dump its contents into the river. | |
| Years went by, and occasional storms drenched the area. High winds whipped through the **trees** and blew leaves into the water.  Gradually, the city of Boston grew on the banks of the Charles. Developers cleared wetlands and forests to build houses and businesses. Rains washed loose soil from **construction sites** into the river.STEM Logo - University SealSTEM Logo - University Seal  **Is this water safe to drink?    Would you swim in it? Is it safe for wildlife?** At first, the city was small. Upstream, **farmers** planted crops to feed the city’s growing population. Some of these crops grew right up against the banks of the river, and fertilizer washed off the land and into the water. Other farmers kept pigs and other animals in their **barnyards**. As rainwater drained out of the barnyard, it carried some of the manure into a little creek behind the farm. The creek flows into the river.  **Would you drink this water now? Would you**  **swim in it? Go boating on it?    Is it safe for wildlife?    *Story continues -->*** Now, Boston is one of the largest cities in Massachusetts. Traffic congestion is a big problem for **commuters** who drive their cars to and from work. Car exhaust fumes (just like power plant fumes) cause acid rain. If a car is not kept in good repair it might also leak oil or other fluids, which will be washed off the pavement and into the river with the next rain. And how do the residents of the city and its suburbs spend their time? In one neighborhood, lots of **gardeners** are out working in their yards. Many of them are using weed killers and insect sprays to keep the lawns pretty. The next rain will wash these poisons into a little creek nearby, and then into the river.  One father is teaching his daughter how to change the **antifreeze** in their truck. They pour out the used antifreeze into the driveway. Antifreeze is sweet tasting and can poison animals that lick it. It can also get into the nearby creek and poison fish.  Nearby, a boy **washes the family car**. The soapy water rushes down the driveway into the storm drain; the storm drain empties into the river. ***Story continues -->*** | As the city grew, more and more people began to move to the nearby countryside. These rural houses are not connected to the city sewer system. Waste water from these houses flows into septic tanks under the ground. One **homeowner** has not maintained the septic tank and poorly treated sewage seeped into the river.  To meet the electricity needs of the city, area officials decided that they would need to generate more power. Far upstream, a **coal mine** was dug. Rain water drained down into the mine shaft and soaked the piles of wastes and scraps from mining. This made the rainwater become acidic—sort of like strong vinegar. Then the acid water trickled off the banks and back out into the river.  To burn the coal, and produce the power, an **electric power plant** was built along the river. Gasses coming out of the smokestacks combine with moisture in the air to form acids. The pollution falls back to earth as acid rain or smog.  **Would you drink this water now? Would you**  **swim in it? Go boating?    How could we determine if this water was safe**  **for wildlife?**  ***Story continues on back***  The grease and grime on a car can contain asphalt from the roads, asbestos from the brakes, rubber particles from the tires, toxic metals, and rust. If the boy had gone to a local car wash, the water would have been treated before it returned to the river.  Next door, a family is cleaning out their garage. They find an old rusty can with a tattered skull and crossbones label still stuck on it. What could it be? It looks dangerous and they want to get rid of it before someone gets hurt. But how? Junior gets an idea: “Let’s pour it down the drain out by the curb!” So the **mysterious liquid** goes down the storm drain. The poison is out of sight – but is headed for the river.  On nice days, many people head down to the river. Some zoom up and down the river in **motorboats** and don’t notice that a little engine oil leaks into the water. A group of friends have spread blankets on the shore for a **beach party**. Lots of families are **picnicking** in the parks, too. Some of these people have left trash on the shore. With the next storm, that trash will wash into the river. On the shore a **person fishing** snags a hook on a log, and breaks off the nylon fishing line. |

**Questions**

1. Who has contributed pollution to the river? How did the pollution travel to the river?

2. What are some effects of increasing population on the river? Name at least one negative and positive.

3. What are some ways that the river can be cleaned up?

4. Would it be cheaper and/or take less time to clean the river after it has been polluted, or work to prevent pollution before it reaches the river?