

# Essential Question: How has pollution and flooding affected Southern & Eastern Asia?

Standard:

SS7G10a. Describe the causes and effects of pollution on the Yangtze and Ganges Rivers.

SS7G10b. Describe the causes and effects of air pollution and flooding in India and China.

# Read the passages. Underline or highlight the causes and effects of pollution in SE Asia

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Pd: \_\_\_\_\_

Read the following passages. Underline or highlight causes of Air Pollution, Water Pollution, and Flooding.

## Dreadful Air and Terrible Water

India and China are dealing with serious **air pollution** and **water pollution** problems. The large cities especially face growing pollution issues because of their large populations, industrialization, and increased use of cars. When China was preparing for the Beijing Olympics in 2008, it banned half the cars from driving each day **in an effort to** clean up the polluted air. The disastrous effects of **flooding** are another challenge for many countries in Southern and Eastern Asia.

### India: A Polluted Sacred River

The **Ganges River** has been a sacred part of the Hindu religion for several thousand years. Varanasi is the holiest of the cities along the river's 1,560-mile course. In 2001, about 20 million people bathed in the Ganges at Varanasi during an important festival of the Hindu religion. Unfortunately, this was a very bad idea. The Ganges River is highly polluted with dangerous bacteria. About 300 million gallons of untreated sewage, trash, and food are poured into the Ganges daily. Experts estimate that above 80 percent of all illnesses of one third of deaths in India come from diseases carried by dirty water.

Hindus believe that they will have a peaceful journey to the next life if their ashes are strewn in the Ganges River. Tragically, families who cannot afford that process often place the body of their loved ones in the river instead. Animal carcasses are deposited there as well, adding to an already dangerous situation. Many of India's sewage systems are simply overwhelmed since they were designed in the early 1900s and haven't been updated, even though the population in India has soared over the last century.

### The Yangtze: Pollution and Problems

In China, more than seven percent of the world's population or 400 million people, live along the banks of the **Yangtze River**. Billions of tons of chemicals and waste from agriculture, industry, and people pour into the river every year.

Because of the river's vast size, the pollution is somewhat diluted. Nevertheless, the nitrates from farm runoff enable algae to multiply, decreasing oxygen that fish need to survive. Pollution has killed the smaller fish in the river and harmed the larger ones, so that many people are afraid to eat any of the fish caught there.

Hundreds of millions of Chinese villagers do not have safe drinking water because water sources like lakes, rivers, and aquifers have been polluted by industry. Water pollution affects Chinese cities as well. When water quality is tested and the water is too polluted to drink, city residents drink bottle water. Schools sometimes close because there is no clean water for students.

### Hold Your Breath in China

Industry is growing in China, and air pollution is growing along with it. In a recent study by the World Bank, China is home to 16 of the world's 20 most polluted cities. The World Health Organization states that China pimps one third of the world total of pollutants like sulfur dioxide, ozone, and nitrogen dioxide into the world's air. Burning fossil fuels such as coal and petroleum to power Chinese industry and cars is a major source of pollution. The Chinese people also burn coal to heat their homes, adding to the pollution problem.

This air pollution results in lost work due to illness, early deaths, and chronic bronchitis, a lung condition. The Chinese Ministry of Health states that pollution has made cancer the leading cause of death in China. The European Union says that only one percent of China's 560 million city dwellers breathes safe air.

Unfortunately, the air pollution problem is not contained to China. Winds carry the foul air to Korea and Japan as well. Researchers have even discovered particulate matter from Asia in the air pollution over the west coast of the United States! This is known as the **Asian Brown Cloud**.

### Keep Holding Your Breath in India

China's air quality is mirrored in India, where industry is growing, more cars are appearing on the roads, and air quality is steadily decreasing. Indoor air pollution is also a growing hazard. Most people cook every day, using unprocessed fuel that emits toxic fumes. Because of India's rapidly growing population, more and more Indians are exposed to larger amounts of pollution every year. Air pollution causes more than half a million deaths a year in India.

India is investing money in cleanup efforts, but the growing population outpaces its efforts. The Taj Mahal, a sacred site and popular tourist destination, is growing yellow from pollution. Some experts believe that smog from India and China could possibly change weather patterns in North America.

### Rain, Rain, Go Away

**Monsoons** are a mixed blessing for India. While farmers depend on the rain for their crops, and the huge amounts of water are used to generate electricity, the monsoons are often responsible for heavy floods. The Monsoon season arrives in India each year in June and spreads heavy rain until September. If flooding occurs, rivers overflow their banks, leading to terrible destruction and water-borne diseases.

In 2005, monsoon rains poured 37 inches of rain in a 24-hour period on western India, causing the airport to close, animals to drown, and powerlines to fall. In August 2008, a dam in Nepal burst and flooded one of India's most heavily populated states. Houses and cattle were buried. People died and water-borne illnesses posed a serious threat while workers tried to rescue stranded citizens.

### 2,000 Years, 1,000 Floods

Annual monsoon rains in China are beneficial to farmers, but also cause floods, usually every two to three years. In China, the monsoon season runs from March through August. Flooding from China's Huang He (Yellow) River has killed more people than flooding from any other river in the world. In 1887, nearly two million people died because of flooding from the Huang He, and in 1931, almost four million people died.

The Huang He River flows through China's major farming area and picks up the fertile yellow topsoil along its path. This silt continually builds up so that the river is higher than the surrounding plains. The Chinese have constructed dikes to manage the river. However, when the dikes fail and the river floods, homes and crops are buried and lives are lost.

The monsoon rains also swell the Yangtze River and its tributaries. Over the years, loggers working upstream on the Yangtze have cut down trees that used to help contain flooding, and farmers downstream have drained wetlands that used to act as sponges during floods. These two actions multiply the effects of the storm water runoff. Because of this deforestation and wetlands loss, it now takes much less water to cause a flood.


# Now take out your notes and follow along to fill in blanks and complete the multi flow maps

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Pd: \_\_\_\_\_


## Southeast Asia Environmental Issues

How has pollution and flooding affected Southern & Eastern Asia?

### Causes



**Air Pollution Definition:**



### Effects

**Asian Brown Cloud:** \_\_\_\_\_


**Interesting fact about Asian Brown Cloud:** \_\_\_\_\_

### Flooding & Water Pollution


Label the rivers on the map with the appropriate names. These rivers are a major source of pollution in SE Asia: Mekong, Huang He, Ganges, Indus, Yangtze

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_

Because parts of China and India are located along \_\_\_\_\_ they are subject to flooding, which can \_\_\_\_\_



### Causes




**Flooding**

**Monsoon:** A monsoon is a seasonal change in \_\_\_\_\_

\_\_\_\_\_

Monsoons can cause \_\_\_\_\_

Flooding can occur during the \_\_\_\_\_




### Effects

### Causes

**Water Pollution**

**Water Pollution Definition:**



### Effects



What  
environmental  
issues are  
illustrated in  
the pictures?



**Air pollution is the introduction  
of harmful materials into the  
Earth's atmosphere.**





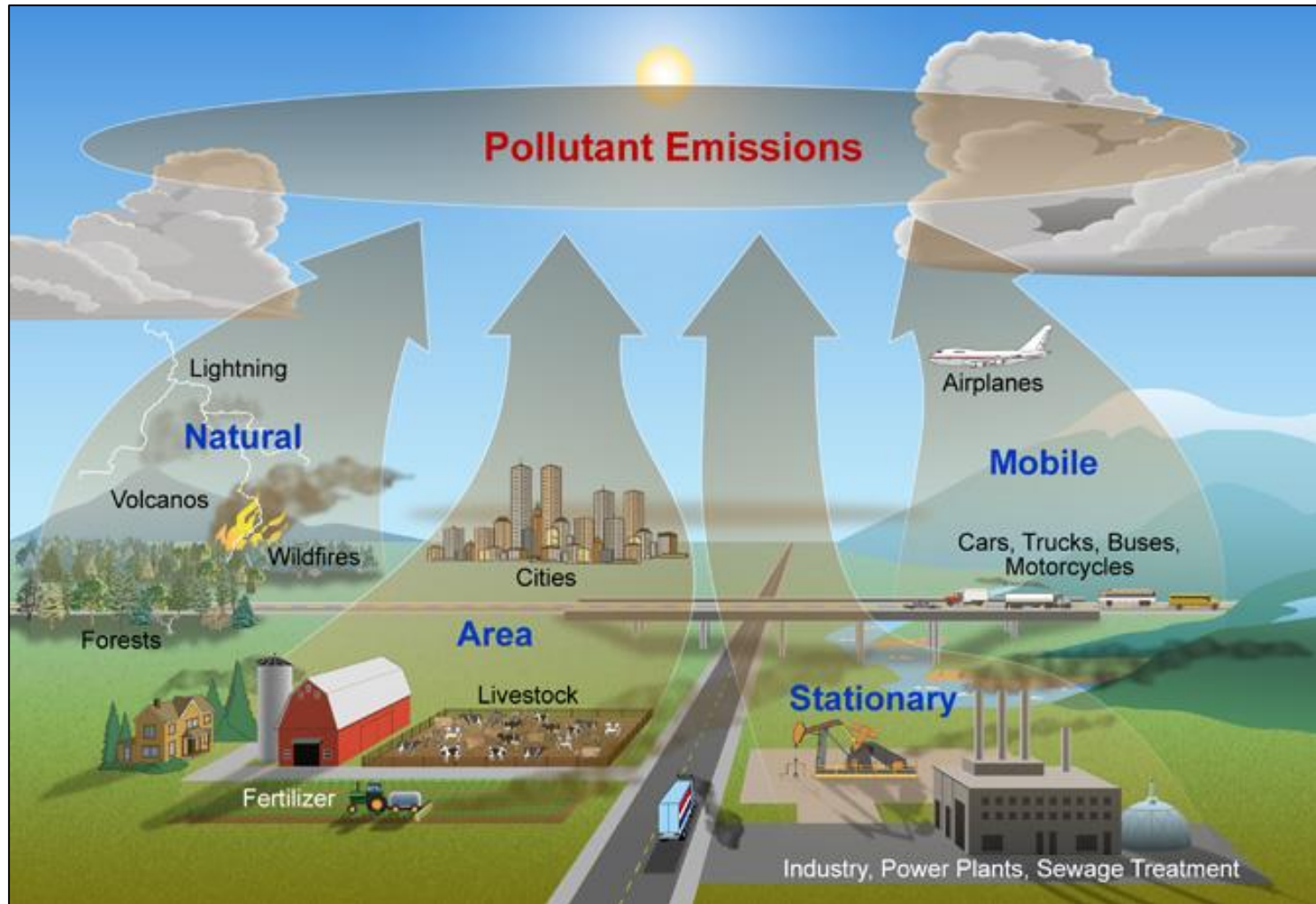
# BrainPOP

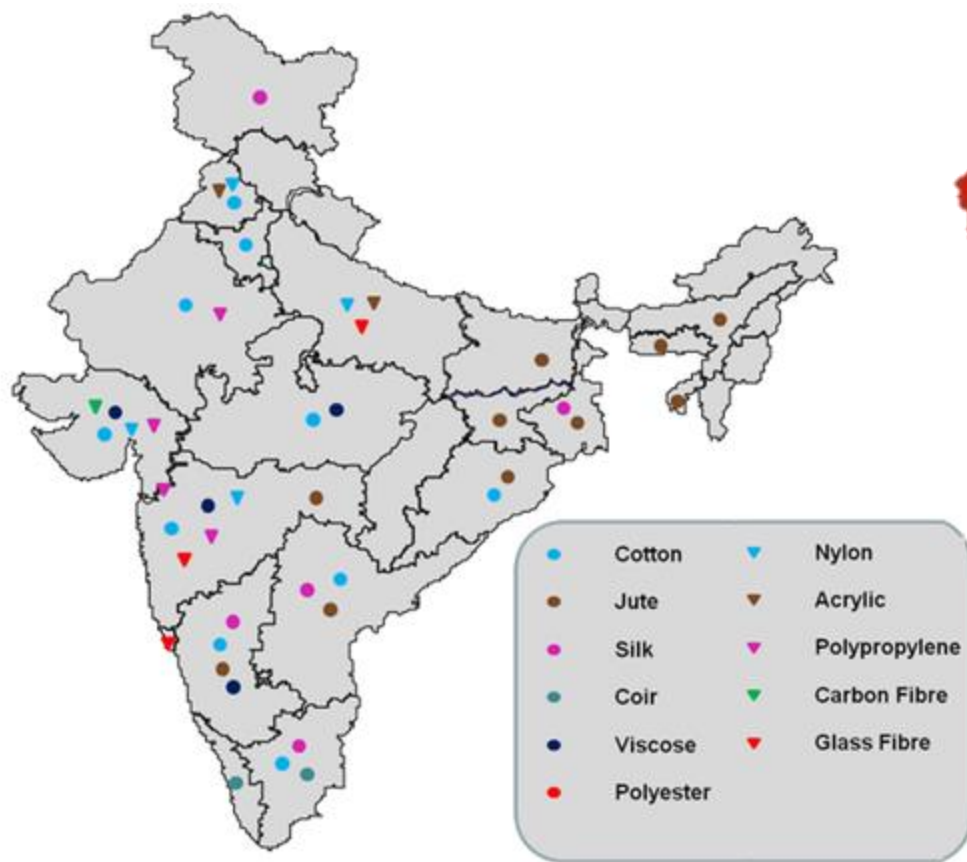
## Air Pollution

<https://www.brainpop.com/science/ourfragileenvironment/airpollution/>



# Causes of Air Pollution





**The growth of industry** has increased air pollution in India and China (burns fossil fuels).





**Population growth** has increased air pollution in India and China.



**Vehicle emissions** has increased air pollution in India and China.

# Indoor Air Pollution is an increasing problem in India and China.





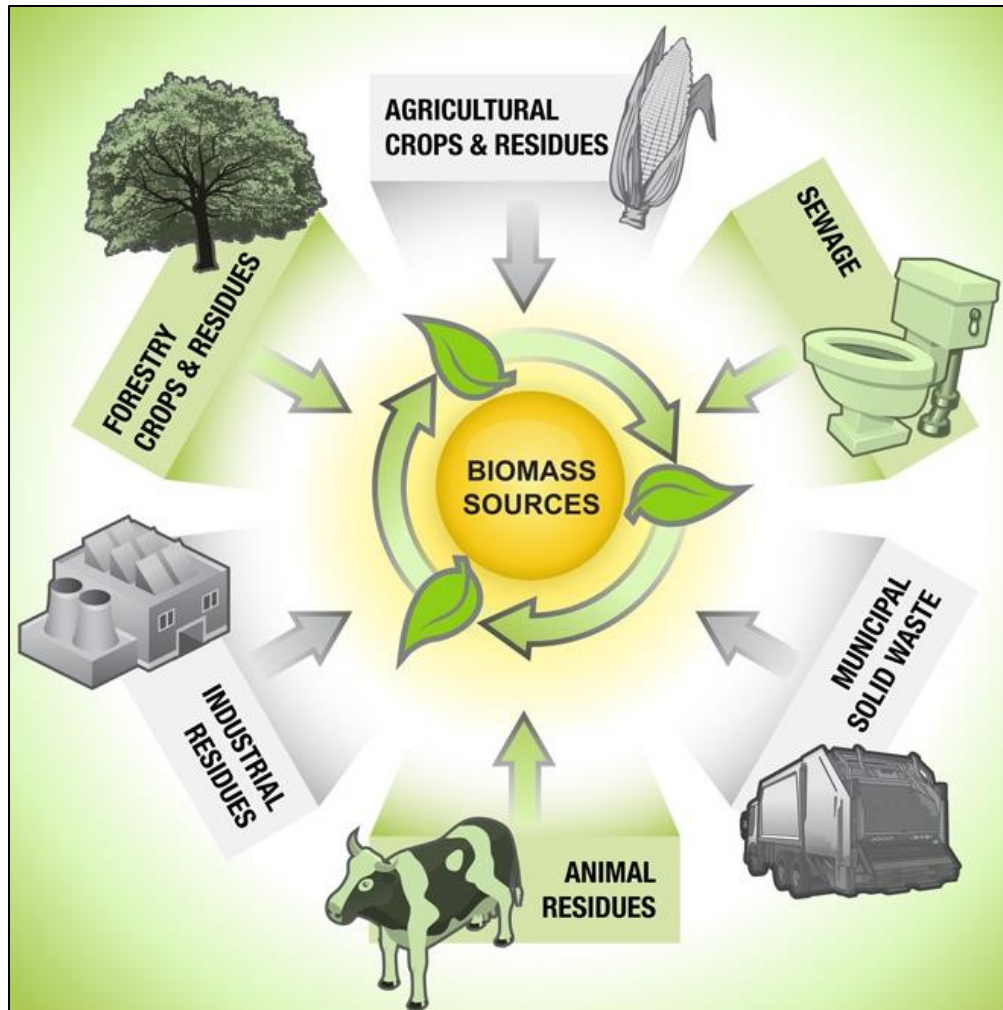


**Many Chinese people use coal (fossil fuel) to heat their homes which increases air pollution.**





The use of **biomass fuels for cooking** has increased indoor air pollution.



**Biomass is biological material derived from living, or recently living organisms**



Cooking that  
Kills [3:00]



# Watch the video clips below about air pollution in China:

- [Air Pollution becoming life-and-death Issue in China](#) [1:56]
- [4,000 People in China Die Every day from Air Pollution](#) [44 seconds]
- [China Pollution Levels Hit 20 Times Safe Limit](#) [59 seconds]



# Think About It!

What are the causes of  
air pollution in India  
and China?

What are some of the  
effects of air pollution?

# Causes:

- Vehicle emissions
  - SO<sub>2</sub>, CO<sub>2</sub>
- Population growth
  - Cooking fires
  - Home heating
  - More cars on the road
- Growth of industry
  - Logging, agriculture
  - Factories and powerplants

# Effects:

- **Harm to humans**
  - **Kills 4,000 in China each day**
- **Harm to climate**
  - **Greenhouse gasses**
  - **Damages ozone layer**
- **Harm to environment**
  - **Acid rain**

# Asian Brown Cloud:

A huge cloud of pollution stretching over large parts of South Asia that is affecting regional climate and weather patterns is also posing a health risk.

**Interesting fact: The Asian Brown Cloud can be seen from outer space!**







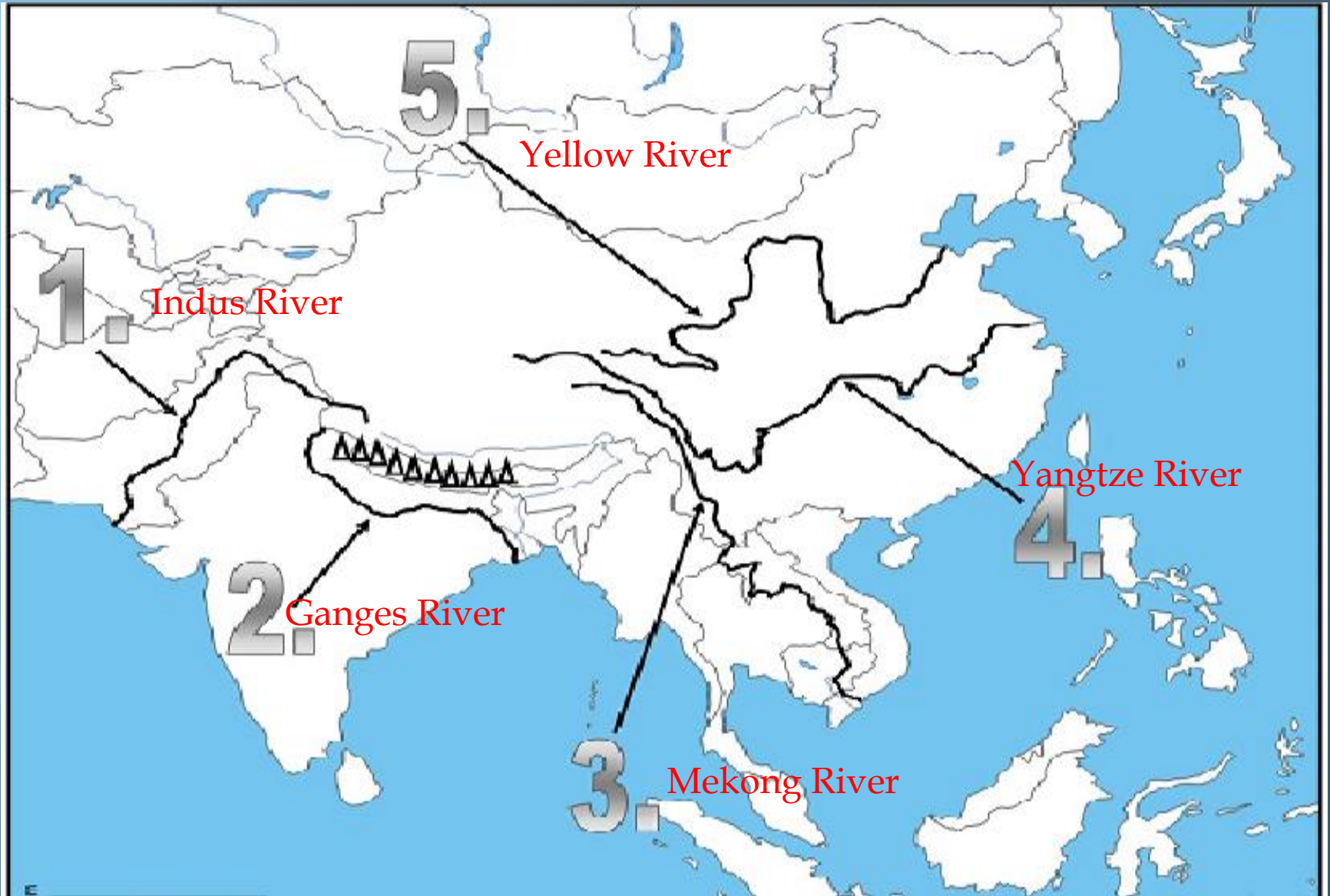
**Flooding in India and China**

# BrainPOP video Flooding

<https://www.brainpop.com/science/earthsystem/floods/>



# Label the Map on your Notes



Because parts of China and India are located along waterways, **they are subject to flooding, which can damage the soil and make areas practically uninhabitable.**





**Monsoons cause the majority of flooding in India and China. What are monsoons?**

**A monsoon is a seasonal change in the direction of the strongest winds of a region. Monsoons cause wet and dry seasons. Flooding can occur during the wet season.**

# Monsoons

[select one or two videos below]

## Indian Monsoon Mechanism Animation

[3:08 animation explaining monsoons but there is no audio]

## Monsoon in Kerala, India [1:22]

## Effects of Monsoon Rain on India

[3:25]

# Think About It!

Why are monsoons a mixed blessing?

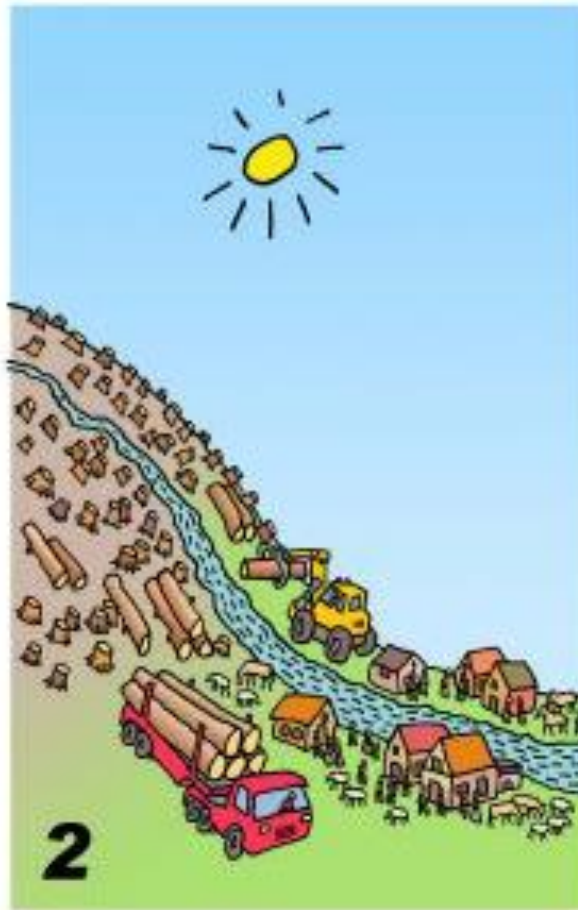
Monsoons help farmers because they rely on rainfall. Water from the rainfall can also be used to generate electricity.

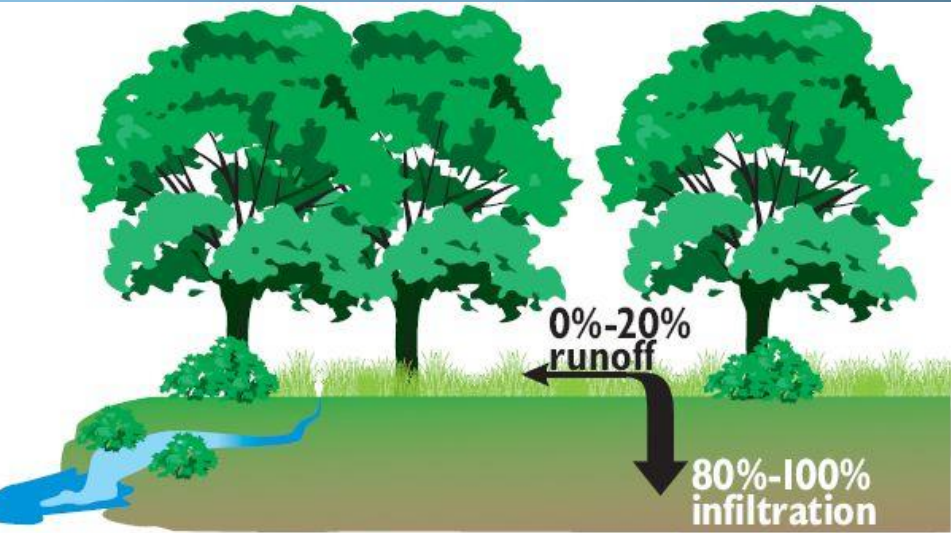
What types of human activity increase the effects of rainfall during the monsoon season?

Deforestation, Land  
Development, Removing  
Wetlands



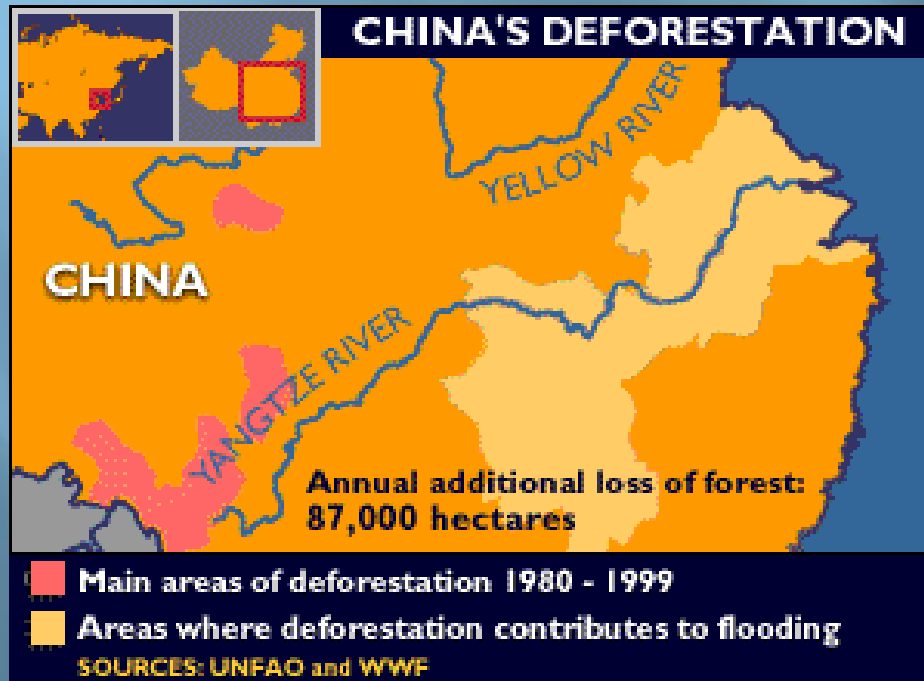
# Human Activities that can Affect Flooding







# Deforestation and the loss of wetlands has increased the effects of flooding in China.



# Let's review:

## Causes of Flooding:

- **Monsoons / Heavy Rainfall**
  - **Deforestation**
  - **Land Development**



# Let's review:

## Effects of Flooding:

- **Loss of human life & livestock**
  - **Water Borne Diseases**
    - **Crops destroyed**
    - **Property Damage**
- **Disruption to communication**



# Water Pollution in India



# BrainPOP!

## Water Pollution

<https://www.brainpop.com/science/ourfragileenvironment/waterpollution/>



# Water Pollution

Dumping sewage, industrial and agricultural wastes cause river pollution, which in turn threatens plant and wildlife species.





# Water Pollution in India

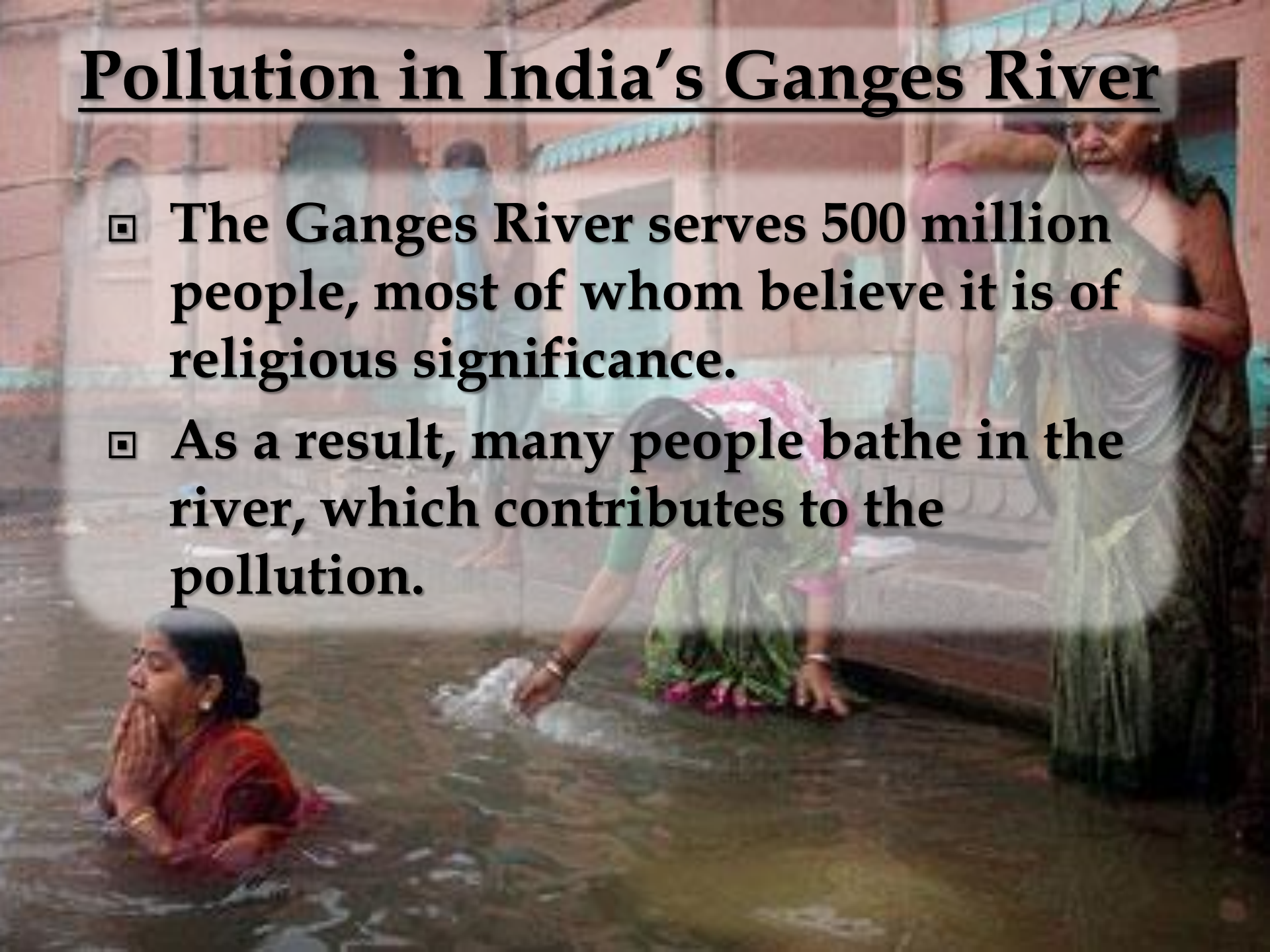
- ▣ Water pollution only worsens India's water shortage problems.
- ▣ Artificial **fertilizers from farming and industrial waste** from factories seep into India's rivers and pollute them.
- ▣ India's Ganges River has been heavily polluted by **industrial waste, sewage, and even human remains.**

# Pollution in India's Ganges River



# Pollution in India's Ganges River

- ▣ The Ganges River serves 500 million people, most of whom believe it is of religious significance.
- ▣ As a result, many people bathe in the river, which contributes to the pollution.





# Pollution in China's Yangtze River



# Water Pollution in China

- ▣ Pollution in the river has increased over 73% in the past 50 years.
- ▣ Most agree the pollution is caused by large-scale **industrial and domestic development**, as well as **agricultural runoff**.
- ▣ **Hundreds of cities** located along the river contribute to the pollution.

# Pollution in China's Yangtze River





# Pollution in China's Yangtze River





Watch the video clips below about water pollution in India and China:

- Move Over Smog: China's Water Pollution Off the Charts  
[3:45]
- India's Polluted Water Systems  
[4:53]

# Let's Review:

## Causes of Pollution:

- ▣ **Sewage**
- ▣ **Agricultural & Industrial Waste**
- ▣ **Cremated bodies / animal carcasses in Ganges**

# Let's Review:

## Effects of Water Pollution

- ▣ Health of humans
- ▣ No clean drinking water
- ▣ Disruption of food chains
- ▣ Destruction of ecosystems

▣ Don't forget to  
complete the Ticket out  
the Door!