

**SS6G9 The student will discuss environmental issues in Europe.**

- a. Explain the major concerns of Europeans regarding the issues such as acid rain in Germany, the air pollution in the United Kingdom, and the nuclear disaster in Chernobyl, Ukraine.

**ACID RAIN IN GERMANY**

Germany is a country of old forests, beautiful rivers, and historic artwork and buildings. Over the past thirty years, **acid rain** has taken its toll on these landmarks. Acid rain has ruined nearly half of the Black Forest in southwestern Germany. It has damaged the soil and the trees growing in it. Many acres of diseased trees are at risk of dying. Sulfur and nitrogen found in acid rain eat holes in the surfaces of statues and buildings. Acid rain pollutes rivers, like the Danube and the Rhine, and kills the wildlife living there.

When it comes to the problem of acid rain, Germany is its own worst enemy. The main sources of acid rain are smoke from factories and power plants. These facilities burn fuels like natural gas, coal, and oil. Cars and buses that burn gasoline and diesel produce these gases too. Germany, however, depends on manufacturing. The country is one of the leading exporters of cars, steel, and chemical products. These industries have mostly coal-burning factories. Germans also own more cars than people of most other countries do. This adds to acid rain through auto emissions.

Nature plays a part in the acid rain problem. The toxic smoke from manufacturing plants is carried by air currents to other places before it falls to earth as acid rain. Germany shares its borders with many other countries. With other countries involved, it is also a more difficult problem to solve. For example, air currents bring the chemical-filled smoke from coal-burning factories in the United Kingdom to Germany. The chemicals fall to earth in Germany as acid rain.

Germany has been working on the problem of acid rain. In southern Germany, plants that use water power from streams and rivers in the region are replacing many coal-burning factories. The German government has passed laws to reduce emissions from automobiles and factories. Factories are switching to cleaner fuels. They are building taller smokestacks that scrub the smoke before it enters the air. In 2007, Germany, as a member of the European Union, promised to increase its use of cleaner, renewable energy by 20 percent. Germany's goal is to decrease the use of fossil fuels like coal and oil.

Germany is developing new types of energy. It is the leading producer of wind turbines and solar power technology in the world. It is home to the largest wind farm and the largest solar energy plant in the world. Because of these changes, the country's harmful emissions are falling. This is reducing the amount of acid rain.

**288. How does nature play a role in Germany's acid rain problem?**

- A. The poisonous emissions from cars cause acid rain.
- B. Air currents carry toxic smoke from other countries' factories to Germany.
- C. The rivers of southwestern Germany are used to make electricity for other countries.
- D. Germany has many buildings that are being destroyed by the chemicals in the acid rain.

**289. What are the main causes of acid rain?**

- A. farms and forests
- B. water power and electricity
- C. coal burning factories and automobile emissions
- D. solar power and wind turbines blowing the poison gases

290. Which situation is an effect of acid rain?

- A. cleaner rivers
- B. diseased forests
- C. buildings and statues that look new
- D. increased automobile manufacturing

291. Which solution to Germany's acid rain problem would be the most challenging?

- A. reducing automobile emissions
- B. increasing the use of wind and solar power
- C. getting other countries to stop using fossil fuels
- D. changing from coal-burning power plants to water-powered ones

### AIR POLLUTION IN THE UNITED KINGDOM

London, the capital of the United Kingdom, is notorious for air pollution. In fact, the word **smog** was first used in 1905 to describe the air in London. Smog is air pollution caused by sunlight acting on the gases from automobile and factory exhausts. It sometimes hangs over cities in the United Kingdom. Thick London smog happens when water in the air mixes with smoke particles from a coal fire. In the **Great Smog** of 1952, the smog was so dense that, for four days, the people in London could not see what was in front of them. Transportation slowed, crime increased, and thousands of people died from the pollution. People around the world suddenly were frightened. They began to worry about the quality of the air they were breathing in.

The United Kingdom's major natural resources are oil, natural gas, and coal. Much of the United Kingdom's manufacturing uses these resources. The Industrial Revolution began around the coalfields where fuel was cheap and available. Many people in the United Kingdom work in these coalfields. Today, coal from these fields still fuels the country's power plants. It also burns in fireplaces and stoves in many homes. Use of coal is decreasing. However, that means fewer jobs for workers in coal mining.

In the past, the major source of air pollution was smoke and sulfur dioxide from burning coal or other fossil fuels. Today, exhaust from gasoline and diesel-powered vehicles is the major problem. Asthma and pneumonia are linked to vehicle emissions. This makes people concerned about air pollution and health. It burns the lungs, nose, and eyes and endangers human life. High air pollution keeps children and senior citizens indoors. Air pollution also blackens buildings and threatens wildlife.

As far back as the 1300s, King Edward I tried to solve the problem by banning coal fires. After the Great Smog, the government created **smokeless zones** in London where only smokeless fuels could be used. Cleaner coals, increased use of electricity, and use of gas have reduced air pollution. Today the government sets limits for industry. Laws have forced automakers to build vehicles that produce less harmful exhaust. The government regularly checks air quality. It asks citizens to drive less and use cleaner forms of energy.

Londoners no longer experience the blackout smog of the 1950s. Air quality has improved. However, the United Kingdom still ranks in the top ten in the world in harmful industrial emissions. Air pollution in the United Kingdom continues to cause acid rain in many countries in Western Europe.

292. What is the main cause of air pollution in the United Kingdom today?

- A. London smog
- B. factory smoke
- C. use of fossil fuels
- D. automobile exhaust emissions

- \_\_\_\_\_ 293. Which is one of the United Kingdom's solutions to the air pollution problem?
- A. monitoring air quality
  - B. restricting driving miles
  - C. allowing factories to pollute without monitoring
  - D. keeping drivers from using gasoline in their cars
- \_\_\_\_\_ 294. Which was created after the Great Smog of 1952?
- A. a ban on coal fires
  - B. an industrial revolution
  - C. London's smokeless zones
  - D. King Edward's ban on coal fires
- \_\_\_\_\_ 295. Which solution began to reduce air pollution in the United Kingdom?
- A. the ban on coal fires
  - B. acid rain in Western Europe
  - C. the development of cleaner coal
  - D. the link between asthma and vehicle exhaust

### **NUCLEAR DISASTER IN CHERNOBYL, UKRAINE**

In 1986, in Ukraine, a country famous for its fertile plains and agriculture, the Chernobyl Nuclear Power Station experienced a disaster. This disaster exposed one-tenth of the Ukraine's 233,090 square miles and approximately one million of its people to unsafe levels of radiation. One of the nuclear reactors at the Chernobyl plant exploded. Tons of radioactive material surrounded the plant, poisoning the land and the water. Even more radioactive material entered the air, falling on northern Europe and Scandinavia. Drinking water was unsafe for months after the accident, and fish in the rivers of the Ukraine and neighboring countries were not safe to eat for years. Nearby pine forests turned brown and died. Many animals died or suffered thyroid damage. A thirty-mile area around the power station was abandoned by humans and became known as the "exclusion zone." The faulty reactor was quickly buried in concrete, but this structure requires major work and the radioactive material is still not safe.

It is difficult to determine the effects on human life. In the first months after the disaster, twenty-eight emergency workers died from acute radiation syndrome. Since the accident, doctors have noticed an increase in cases of cancer in people living in contaminated areas.

Because of Chernobyl, the Ukrainian government decided to become a nuclear-free country. However, due to a lack of power plants in the country and disagreements with Russia over how to get rid of nuclear waste, the three other reactors at Chernobyl continued to operate. The last reactor was finally shut down in 2000.

In the 1980s, many countries were using nuclear power. Nuclear power plants were producing cheaper energy without filling the air with pollution and without using up Earth's supply of fossil fuels. After Chernobyl, concerns about nuclear safety spread around the world. A mistake in one country could have devastating results in another country. Different countries also had different regulations about nuclear power. The reactors at Chernobyl were not housed in the same type of buildings required in other countries. Reactors were not always used for their intended purpose. The Chernobyl reactor was built for weapons material production, not for generating electricity. While regulations did not seem to cross borders, radiation did.

The debate continues. Is the cost savings of nuclear-generated electricity worth the risk of human life? How should nuclear waste be disposed of safely? How should it be regulated? Which is the bigger risk to the environment, nuclear energy or fossil fuel?

- \_\_\_\_\_ 296. Which was an effect of the nuclear disaster at Chernobyl?
- A. People and animals did not get sick.
  - B. Drinking water was unsafe for months.
  - C. Forests got healthier than they had been.
  - D. All the nuclear power plants in the world were closed.
- \_\_\_\_\_ 297. What steps were taken by the government to make the reactor safe?
- A. The reactor was taken apart.
  - B. The reactor was buried in concrete.
  - C. The government quit using nuclear power.
  - D. The reactor was moved to the exclusion zone.
- \_\_\_\_\_ 298. Why were other countries concerned about the disaster?
- A. Chernobyl was immediately closed.
  - B. The cost of nuclear power increased.
  - C. Radioactive material fell on other countries.
  - D. They did not have room for the sick people in their hospitals.
- \_\_\_\_\_ 299. Which problem is associated with the debate about nuclear power?
- A. acid rain
  - B. deforestation
  - C. disposing of nuclear waste
  - D. having enough oil to run nuclear power plants