

Environmental pollution

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Abstract: Pollution is the introduction of harmful materials into the environment. These harmful materials are called pollutants. Pollutants can be natural, such as volcanic ash. They can also be created by human activity, such as trash or runoff produced by factories. Pollutants damage the quality of air, water, and land.

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Many things that are useful to people produce pollution. Cars spew pollutants from their exhaust pipes. Burning coal to create electricity pollutes the air. Industries and homes generate garbage and sewage that can pollute the land and water. Pesticides chemical poisons used to kill weeds and insects seep into waterways and harm wildlife.

All living things from one celled microbes to blue whales depend on Earth's supply of air and water. When these resources are polluted, all forms of life are threatened. Pollution is a global problem. Although urban areas are usually more polluted than the countryside, pollution can spread to remote places where no people live. For example, pesticides and other chemicals have been found in the Antarctic ice sheet. In the middle of the northern Pacific Ocean, a huge collection of microscopic plastic particles forms what is known as the Great Pacific Garbage Patch. Air and water currents carry pollution. Ocean currents and migrating fish carry marine pollutants far and wide. Winds can pick up radioactive material accidentally released from a nuclear reactor and scatter it around the world. Smoke from a factory in one country drifts into another country. In the past, visitors to Big Bend National Park in the U.S. state of Texas could see 290 kilometers (180 miles) across the vast landscape. Now, coal-burning power plants in Texas and the neighboring state of Chihuahua, Mexico have spewed so much pollution into the air that visitors to Big Bend can sometimes see only 50 kilometers (30 miles).

The three major types of pollution are air pollution, water pollution, and land pollution.

Sometimes, air pollution is visible. A person can see dark smoke pour from the exhaust pipes of large trucks or factories, for example. More often, however, air pollution is invisible.

Polluted air can be dangerous, even if the pollutants are invisible. It can make people's eyes burn and make them have difficulty breathing. It can also increase the risk of lung cancer.

Sometimes, air pollution kills quickly. In 1984, an accident at a pesticide plant in Bhopal, India, released a deadly gas into the air. At least 8,000 people died within days. Hundreds of thousands more were permanently injured. Natural disasters can also cause air pollution to increase quickly. When volcanoes erupt, they eject volcanic ash and gases into the atmosphere. Volcanic ash can discolor the sky for months. After the eruption of the Indonesian volcano of Krakatoa in 1883, ash darkened the sky around the world. The dimmer sky caused fewer crops to be harvested as far away as Europe and North America. For years, meteorologists tracked what was known as the "equatorial smoke stream." In fact, this smoke stream was a jet stream, a wind high in Earth's atmosphere that Krakatoa's air pollution made visible. Volcanic gases, such as sulfur dioxide, can kill nearby residents and make the soil infertile for years. Mount Vesuvius, a volcano in Italy, famously erupted in 79, killing hundreds of residents of the nearby towns of Pompeii and Herculaneum. Most victims of Vesuvius were not killed by lava or landslides caused by the eruption. They were choked, or asphyxiated, by deadly volcanic gases. In 1986, a toxic cloud developed over Lake Nyos, Cameroon. Lake Nyos sits in the crater of a volcano. Though the volcano did not erupt, it did eject volcanic gases into the lake. The heated gases passed through the water of the lake and collected as a cloud that descended the slopes of the volcano and into nearby valleys. As the toxic cloud moved across the landscape, it killed birds and other organisms in their natural habitat. This air pollution also killed thousands of cattle and as many as 1,700 people.

Most air pollution is not natural, however. It comes from burning fossil fuels coal, oil, and natural gas. When gasoline is burned to power cars and trucks, it produces carbon monoxide, a colorless, odorless gas. The gas is harmful in high concentrations, or amounts. City traffic produces highly concentrated carbon monoxide. Cars and factories produce other common pollutants, including nitrogen oxide, sulfur dioxide, and hydrocarbons. These chemicals react with sunlight to produce smog, a thick fog or haze of air pollution. The smog is so thick in Linfen, China, that people can seldom see the sun. Smog can be brown or grayish blue, depending on which pollutants are in it.

Smog makes breathing difficult, especially for children and older adults. Some cities that suffer from extreme smog issue air pollution warnings. The government of Hong Kong, for example, will warn people not to go outside or engage in strenuous physical activity (such as running or swimming) when smog is very thick. When air pollutants such as nitrogen oxide and sulfur dioxide mix with moisture, they change into acids. They then fall back to earth as acid rain. Wind often carries acid rain far from the pollution source. Pollutants produced by factories and power plants in Spain can fall as acid rain in Norway.

Acid rain can kill all the trees in a forest. It can also devastate lakes, streams, and other waterways. When lakes become acidic, fish can't survive. In Sweden, acid rain created thousands of "dead lakes," where fish no longer live.

Acid rain also wears away marble and other kinds of stone. It has erased the words on gravestones and damaged many historic buildings and monuments. The Taj Mahal, in Agra, India, was once gleaming white. Years of exposure to acid rain has left it pale.

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