

Acid Rain in the Appalachians

Many areas in the Appalachians are being affected by acid rain. Acid rain forms when sulfur containing pollutants, typically from coal-powered electrical power plants, combine with water in the atmosphere. The atmospheric water in the form of vapor or clouds then carries the dissolved pollutants far away. Most of the sulfur pollutants found in acid rain falling in Georgia and North Carolina are produced by power plants in western Pennsylvania and the Ohio Valley, not by power plants in Georgia or North Carolina. The acid-containing water compounds are swept south and east by the prevailing winds. As the clouds and vapor approach the Appalachian Mountains, the clouds and vapor start to rise and rain down on western slopes of the mountains. In some cases, this polluted air gets trapped in the valleys. Because of the valley-trapping phenomenon, some apparently pristine areas of Smoky Mountain National Park have some of highest levels of air pollution on the east coast. This type of pollution is called nonpoint source pollution because it is impossible to identify the exact point origin of the pollution.

Acid rain has both direct visible impacts on ecosystems and indirect, less visible impacts. Acid rain does damage foliage of trees, shrubs and other plants. The leaves will exhibit damage, almost like a chemical burn. The leaves eventually turn yellow and fall from the trees. The indirect, less visible impacts are even more damaging. Acid rain changes the pH of the soil. This pH change makes some elements, like calcium, more soluble, so they wash away in the rain and are no longer available for plants. The pH change also frees or makes soluble several heavy metals. These metals under normal pH conditions are bound to soil particles. Heavy metals are toxic plants. Acid rain washes away important nutrients and releases harmful metals. As a result, plant health declines and causes plants to be more susceptible to pests, other environmental stressors and disease.