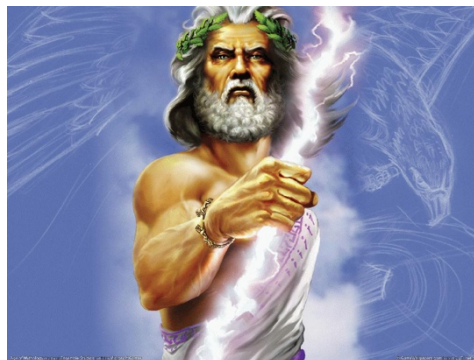


Can't You Smell that Smell?

The peculiar odor in the air after a lightning strike has been known for centuries. For example, in the *Odyssey* Homer wrote, “*Zeus thundered and hurled his bolt upon the ship, and she quivered from stem to stern, smitten by the bolt of Zeus, and was filled with sulphurous smoke.*”

This was a common description, referring to the smell as similar to that of sulfur. By the 1700s we are learning to control electricity and the same smell is noted and described as the odor of electricity.



Christian Friedrich Schönbein 1799–1868
The Discoverer of Ozone



It was not until 1840 that Christian

Schönbein of Basel, Switzerland recognized that the odor was not due to the electricity itself, or to the lightning, but was due to the properties of a substance produced during the electrical process. He named this substance ozone, a name that he derived from the Greek word “*ozein*” meaning “to smell.” It was several decades later before the composition of ozone was determined to be O₃ (O-O-O).

We now know that all of the things that we smell are because of molecules from a substance that are in the air we breathe. The molecules bind to receptors in the nose and send a message to the brain identifying the smell.

Ozone became known as a powerful disinfectant. It could be bubbled through water to remove impurities. The first commercial ozone generator was invented in 1866 by von Siemens in Berlin. Ozone is still in common use in disinfecting swimming pools, mainly in Europe as opposed to the US where chlorine is the more common disinfectant.

While ozone was indeed a useful and important disinfectant, there were some who went enthusiastically overboard on its potential. For instance, in a 1873 book, Cornelius Fox declared:

Ozone is a deodorizing and purifying agent of the highest order, resolving and decomposing into primitive and innocuous forms. It should be pumped into our mines and cities, and be diffused through fever wards, sick rooms, the crowded

localities of the poor, or wherever the active power of the air is reduced and poisons are generated.

Long before I was drawn into research on ozone I had a direct experience of the smell of ozone. In college I got a job working in a small meat market on 6th Avenue in Tacoma owned by Leno Gentili. My job was cleaning and making deliveries to Mom & Pop grocery stores around the city. One of the cleaning jobs was the inside of the door to the meat locker where the sides of beef and pork hung. As they were carried out to be butchered, the meat would rub against the inside of the door leaving a residue. My job was to go into the locker, close the door, and use a wire brush to scrape off the meat residue.

Inside the meat locker was a UV lamp whose purpose was to disinfect the meat. The UV from the lamp produced ozone that filled the locker at a level that could be smelled and gave me raging headaches by the time that I was finished. If you are not familiar with the smell of ozone you may remember it from some of the early Xerox machines; an acrid smell that was reminiscent of electrical burning.

In the next essay we will delve into the properties of ozone, especially its absorption of ultraviolet radiation and how scientists came to understand the nature of radiation.