AIRCLEAR

AIR CLEAR'S

History of Air Pollution Control

by Steven M. O'Connor

HISTORY OF AIR POLLUTION CONTROL

Since people began living together in densely populated cities, air pollution has been an issue for residents. Edward the First of England was so perturbed by complaints about air quality from London residents that he banned the burning of "Sea-coal" in lime kilns. In 1285 AD, he enacted harsh penalties for anyone who didn't adhere to the first known air regulation. It had little to no effect. At the end of the 1300s, the problem diminished, only to reappear by the middle of the sixteenth century. These periods of peak air pollution problems in pre-industrial London corresponded roughly with periods of rapid expansion, population growth, and during fuel crises. Items like sea-cóale which pollute more are cheaper and less desirable; they were burned when the preferred fuel (wood) dropped into periods of high prices and short supply.

In the 1700s, at the dawn of the Industrial Revolution, the term 'London Fog' described the massive amounts of coal particulate that were constantly hovering over the city like a dense cloud of water vapor. The shift to machine-based processes occurred seemingly overnight, and along with it came a rapid increase in deadly air pollution. British textile mills were among the first factories built, and they quickly spread to the United States. The 18th century also saw technological advancements, like steam power fueled by coal, driving new machines in factories across the country. Innovations in production lines and technological advances, industrial toolmaking, and materials science made mass production a reality. However, Soot and Smog began to seriously impact residents living near industrial areas. The domino effect of rapidly advancing technology had an equally unfortunate health effect on people living in densely populated areas. It took until 1875 for the British government to try again to deal with air pollution. This time, Parliament passed the Public Health Act, and had groups of engineers carry out various studies on urban pollutants. Those engineers ultimately decided that they had to figure out how to eliminate the nuisance of smoke without disrupting their rapidly growing economy. Tasked with ways to develop clean-burning, smokeless coal, the engineers also set out to define the composition and quantity of air pollution.

443.245.3400 443.245.3407
2400 Oldfield Point Rd
Elkton, MD 21921

Emission abatement was now something that scientists were beginning to investigate, with innovative and interdisciplinary approaches even catching on in America. By the 1930s, most significant cities had air emission abatement laws on the books, but they rarely enforced them. Unfortunately, concern about air quality was still in its infancy. In October 1948, in the small town of Donora, PA, when a lethal haze of thick gray smog enveloped the entire town, no one knew what to do. Soon, 7,000 residents began experiencing severe cardiovascular and respiratory problems, with experts utterly unaware that a pocket of warm air had passed high over the town, trapping cooler air and dangerous pollutants from steel and zinc smelters. It was almost impossible to breathe, and by the time it ended, over 40 people were dead. Four years later, back across the pond, the Great Smog of 1952 occurred over several days. Deadly pollutants from various factories and residential fireplaces mixed with air condensation, ultimately killing at least 4,000 people in London - a staggering number. A few years later, geochemist Charles Keeling developed 'The Keeling Curve,' which revealed a steady rise in CO_2 levels that scientists now widely accept led to climate change.

Air pollution has become a major consequence of industrial growth, both across the country and worldwide. Unfortunately, it still took years before the US government finally did something about air pollution. Congress passed the Clean Air Act in 1963, which laid the groundwork for the country's air quality standards. As the EPA would soon find out, identifying and monitoring air pollution is much easier than regulating and enforcing it. In the early 60s, environmental and health concerns were brought on by rising death tolls from ecological disasters and the ever-thickening smog hovering over major metropolitan areas.

Today, we understand air pollution and how to combat it. The leading cause of air pollution is currently the combustion engine, making emissions from motor vehicles our biggest problem. Cars and trucks are vital to our economy; over 70% of all goods are transported to us on trucks. Unfortunately, they are massively responsible for our country's greenhouse gases.

The 1970s heightened public concerns about rapidly deteriorating air across the country and an ever-increasing number of natural areas littered with trash. In conjunction with the dire situation of contaminated urban water supplies, President Richard Nixon announced a 37-point message on the environment, which led to the Environmental Protection Agency. Nixon felt that national air quality standards needed to be implemented immediately and went on to pass imperative environmental goals, the first Clean Air/Water acts, which allowed governmental response to ecological problems in a manner never before possible.

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Under President Bush, amendments to the Clean Air Act were passed. Presidents Obama and now Biden have promoted renewable energy and sustainable practices. All of these efforts have helped fight back against air pollution. One area that still needs attention is the reduction of toxic air emissions from the industrial sector. However, these legislative efforts have to be careful not to go too far and harm the economic well-being of American companies. It is a balancing act that must consider both the economy and the environment. Air regulations must be fair but effective, and we should continue to strive for the advancement of air pollution control technologies and improved government policy.

Currently, strides have been made worldwide. After poor air quality at the Olympics in Beijing in 2008, China made massive strides to improve air quality. They passed some of the strictest laws. Law DB33 states that companies are not to have even harmless water vapor visibly emitted from their stacks. The international embarrassment motivated them to change. For other corporations, 'sustainability' has become a marketing buzzword. In the US, mandates for electric vehicle production have been spreading from state to state with accelerated timelines to help foster manufacturing. It's rarely mentioned that the batteries needed for electric vehicles are made with 'conflict minerals,' like lithium, that must be mined from the Earth, causing a negative environmental impact. It is often a trade-off between the economy and the environment, but does it have to be?

If we look to reformulated gasoline to include additives like ethanol to result in cleaner emissions, we see environmental questions on both sides of the issue. You can argue that ethanol in fuel production here in the US could have less to do with its effectiveness as a gasoline additive and more to do with the government subsidizing corn production for farmers across the country. In the US, ethanol fuel is produced by using corn as the main feedstock. So the controversies that involve American ethanol fuel production are related to its environmental impacts. We've already had additives like corn syrups added to a wide range of our processed foods, and we should always be sure in this day and age to ask questions about what we are told is best for the environment. We know it requires enormous pieces of land and that the distillation process is not exactly environmentally-friendly. However, ethanol burns more completely than ordinary unleaded gasoline and reduces automotive emissions. Claims that it raises the overall costs of our foods are common. As with most environmental subjects these days, we need to look closely at where we are getting our information. Doing independent research for ourselves to verify that the information is not coming from a particular interest group is more important than ever.

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The less foreign oil we rely on, the better off we seem to be. Worldwide, we see renewable energies like solar, geothermal, wind, tidal, biomass hydraulic, and landfill gases like methane captured and converted to energy. All of these efforts are fantastic, but they aren't enough.

At Air Clear, we focus on the second-largest source of air pollution. After vehicle emissions, the next source is industrial manufacturing. We offer proven solutions to tackle everything from Volatile Organic Compounds (VOCs), Particulate Matter (PM), Hydrocarbons (HC), Nitrogen Oxides (NOx), Sulfur Dioxide (SO_2), Carbon Monoxide (CO), Ozone, Hydrogen Sulfide (H_2S), Toxic Airborne Contaminants such as PFOS/PFOA (PFAS), as well as Lead (Pb), Greenhouse Gases like Nitrous Oxide (N_2O), Methane (CH_4), Carbon Dioxide (CO_2), and many more Hazardous Air Pollutants (HAPs). How does Air Clear control all of these pollutants from industrial applications? A wide variety of innovative solutions and cutting-edge and proven technologies such as Regenerative Thermal Oxidizers (RTO), Catalytic Oxidizers, Direct Fire Thermal Oxidizers, FiberBed Filter Units known as Mist Collectors, Granulated Activated Carbon Units (GACs), along with other odor control systems such as Microbes. We custom-engineered our equipment for the needs of specific industrial processes that our clients face.

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