Smoky Ol’ Town:
The Significance of Pittsburgh in U.S. Air Pollution History
by James Longhurst

If you flip back to the masthead in the early pages of this magazine, you will notice that the headquarters office of the Air & Waste Management Association (A&WMA) is located in downtown Pittsburgh, PA. Why is the office of this international organization found in this particular city? Why not Los Angeles, or Chicago, or London, or Buenos Aires? The answer is that Pittsburgh is both unique and representative of other cities; historically, it was the location of some of the nation’s worst air quality and best innovations in control. But Pittsburgh’s story might also be instructive in understanding broader themes in pollution and its management. Historians have emphasized four general themes in describing Pittsburgh’s pollution history: nature, geography, and geology; economy and technology; politics and citizens; and science and policy. These themes may be extended to facilitate a broader understanding of the history of the environment in many cities.

NATURE, GEOGRAPHY, AND GEOLOGY
Pittsburgh came to be—and came to be dirty—because of location, location, and location. Two navigable rivers met in the middle of a forest, and combined to form a third river. This was an irresistible meeting point for settlement, trade, and industry. It was an added bonus that this meeting point was at the center of the “Pittsburgh seam” of coal. While the natural advantages of geography and geology initiated development, Pittsburgh’s growth soon attracted man-made transportation networks to import resources from its hinterland and spread finished materials through the Midwest.

As early as 1817, visitors were remarking on the city’s dirty air in national almanacs and navigational guides: “Even snow can scarcely be called white in Pittsburgh,” wrote one visitor in Zadok Cramer’s Navigator. Location, natural resources, and industrialization created the smoke, but the geography of the region served to trap and intensify it. The workers’ houses and sprawling mills of the late 19th century were built along the rivers, and the smoke and soot of the factories, homes, railroads, and steamships were trapped along those same rivers by the steeply rising riverbanks. “It is curiously hemmed in—that small triangle of low land upon which the city was originally built,” noted an 1898 article in the Atlantic Monthly.

As the city boomed into an industrial metropolis—the Iron City, the Steel City—through the late 19th and early 20th centuries, the smoke only became worse, and Pittsburgh became known, nationally and even internationally, for its dirt, grime, and filth. For many of the city’s workers and businessmen, smoke was a sign of progress and economic success, as Harper’s Weekly noted in 1871: “[T]he visitor learns that the black canopy is the ‘pillar of cloud’ to Pittsburgers [sic], assuring them that the industries are still prospering.”

But for others, smoke was a less pleasant experience. A correspondent for Harper’s described the city in 1892: “The buildings up and down the river were black and dirty beyond all hope of cleanliness, the bridges were grimy with soot and smoke . . . and over all was a cloud of smoke that rolled and drifted and surged as thick as a black fog. Smoke was everywhere.”

But however filthy Pittsburgh became, it was fundamentally no different from other American cities, and indeed cities around the world: Its pollution problems were defined, created, or intensified by its natural surroundings.

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ECONOMY AND TECHNOLOGY

Pittsburgh’s natural resources and geography might have made the components of industrial production available and intensified the resulting smoke, but what exacerbated the city’s pollution problem was a series of highly successful technologies and business models. From small-scale iron production, to the process of refining coal into “coke,” to the Bessemer steel process, to J.P. Morgan and Andrew Carnegie’s creation of the vertically-integrated U.S. Steel corporation, to the pioneering use of “byproduct” coke ovens, Pittsburgh was home to successive technologies for transforming raw materials into finished or refined goods.

All would be fine if these technologies and models did not share two characteristics. First, they were stunningly profitable, thus encouraging competition and rapid expansion on an unprecedented scale. When U.S. Steel was formed, it became what some have described as “the largest industrial corporation in the world.” Second, they almost all depended upon finding some (preferably free or inexpensive) way to dispose of unwanted byproducts—that is, they searched for an “ultimate sink.” For example, in the 1920s, under threat of regulation, the region’s coke plants agreed to stop dumping wastewater contaminated with phenols into streams. Instead, coke producers used that “process” water to quench the cooling coke, thereby “getting rid” of the wastewater by transferring it from water to an air sink—and thus spreading the pollution over an even wider area.

Innovation in technology and organization continued to fuel industrial production through the early 20th century, and despite decreased production during the Great Depression of the 1930s, there was little success in controlling the city’s pollution. As folksinger Woody Guthrie’s 1940 song put it: “Pittsburgh town is a smoky ol’ town . . . solid iron from McKeesport down,” and that mass of factories made visitors “cough and choke/from the iron filings and sulfur smoke.” Not much seemed to have changed from the previous century’s complaints.

 POLITICS AND CITIZENS

Pittsburgh’s pollution was also transformed, at least partly, by waxing and waning political fortunes and popular preferences. Three political reform movements affected most U.S. cities in the 20th century, and Pittsburgh’s experience was no different.

The Progressives

While it was not the first nationwide movement to reform America’s cities, the Progressive movement may have been the most widespread and the most meaningful. Thousands of civic and social reformers embarked on a “search for order” in America’s disordered cities, tackling problems as varied as tenement reform, food safety, labor unrest, and landscape aesthetics. In Pittsburgh, reformers urged coal-burners of all types to tend their boilers more carefully, in the hopes that a more efficiently-fired steamship or railroad or furnace might result in less smoke. When smoke sources did not voluntarily limit their emissions through better fire maintenance, civic organizations such as the Twentieth Century Club and the Smoke and Dust Abatement League supported plans to observe smokestacks, report offenders, and establish some city-level ordinances to discourage smoke. In fact, the city created a Bureau of Smoke Control to oversee new monitoring and controls on smoke. It was out of this movement to put the maintenance of city atmospheres under the control of engineers, professionals, and government representatives that the International Association for the Prevention of Smoke—progenitor of A&WMA—was born.

The City Boosters

While Progressives across the nation had varying levels of success in their many goals, in Pittsburgh their attempts to clean the air proved largely unsuccessful. It was not until 1940, following the lead of St. Louis, that Pittsburgh passed the most stringent smoke control ordinance in the nation. After the interruption of World War II, the achievement of smoke control became a prime objective of the business and political elites advancing the city’s renewal under the banner of the Pittsburgh Renaissance. The city Bureau of Smoke Prevention was empowered to observe smoke from residential and industrial sources, gauge their intensity using a Ringelmann chart (which measures smoke density), and fine violators. New regulations also required that all domestic users purchase “clean” or treated low-sulfur coal, and by the 1950s much of the city had converted to natural gas.

The success of the mid-century smoke control movement demonstrated that there was increasing interest among Americans in the aesthetics and healthfulness of their surroundings. As Americans became more affluent, they became more concerned with the beauty, health, and
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permanence of their natural surroundings. In other words, they became nascent environmentalists.

The Environmentalists

While a growing interest in toxics and pollutants was fueled throughout the 1950s and 1960s by a series of publicized scares and crises (ranging from DDT to Alar to cranberries to thalidomide), it was not until a broader, nationwide surge in environmental awareness that significant policy changes were made. Even before the first Earth Day in 1970, politicians were competing for the leadership on environmental issues, resulting in the National Environmental Policy Act and successive congressional acts that nationalized pollution control in both air and water.

In Pittsburgh, increased popular interest combined with the new requirements for public participation in the national laws to allow for a new round of regulations. Pollution was now being monitored and controlled by three separate legal entities, including the county, commonwealth, and the U.S. Environmental Protection Agency (EPA). The Allegheny County Health Department’s Article XVII demanded serious restrictions on all polluters, and allowed for citizens’ watchdog organizations like the Group Against Smog and Pollution to intervene in policy decisions and legal proceedings. A public debate between citizens, major industry, unions, government regulators, workers, and scientific experts commenced, ending most often in the courts. Concurrent with a significant decline in heavy industry in the late 1970s, these restrictions resulted in considerably cleaner urban air in Pittsburgh by the turn of the 21st century.

SCIENCE AND POLICY

Any success that Pittsburgh had in managing its environment had to be a result of its concentration of highly educated professionals and institutions committed to environmental research. A variety of institutions committed to air pollution monitoring clustered in the area during the post-war years. The national offices of the Air Pollution Control Association (a forerunner to A&WMA) were moved to the Mellon Institute for Industrial Research in the fall of 1951, in the same building with the Industrial Hygiene Foundation and the American Iron and Steel Institute. The Instrument Society of America located its offices not far down the street. The Graduate School of Public Health was located at the University of Pittsburgh, while the Carnegie Institute of Technology (now Carnegie Mellon University) hosted air pollution researchers and engineers in various departments, including the Pittsburgh Coal Research Center, funded by the Bureau of Mines.

Companies dedicated to air pollution monitoring and control clustered in the town, including the Research Appliance Company, the Mine Safety Appliance Corporation, and some of the first air pollution engineering-consulting firms in the nation.

Pittsburgh’s smoky skies and concentration of air pollution researchers produced a number of firsts: the first scientific measurement of dust fall in the United States, the first stack dust sampler with manifold, the first commercially available reel-to-reel tape sampler, the first commercially produced “smokescope,” and the first site for the Public Health Service’s mobile air sampling unit. More important, in the 1970s, Pittsburgh produced the first daily Air Pollution Index based on information from a network of automatic monitoring devices, and the first such index to be based on federal ambient air quality standards.

This concentration of professional knowledge and expertise made it possible for political battles, policy decisions, and legal debates in the area to be well supplied with information, analysis, and innovative options. Many of the area’s air pollution control professionals also belonged, as citizens, to air pollution control advocacy organizations like the Group Against Smog and Pollution.

CONCLUSIONS

Pittsburgh is both singular and representative: its story is at the forefront of pollution history, but the forces, trends, and events the city witnessed were the same in many cities across the nation. So while it is true that A&WMA’s headquarters are in Pittsburgh for a reason, it is also true that its membership is spread across the nation and the world. That membership will most likely find something in these four themes from Pittsburgh’s history that is representative of their own story. em

FURTHER READING


