

Winds of Change



Source: Adapted from Michigan Department of Natural Resources. (1990). "Winds of Change: 25 Years of Air Pollution Control." *Michigan Natural Resources Magazine*. Lansing, MI: MDNR.

Forty years ago George Romney was Michigan's governor and Lyndon Baines Johnson occupied the White House. The war in Southeast Asia was escalating. The Beatles and the miniskirt were hot and so was the Ford Mustang, which sold for about \$2400. The price of a hot dog at the ballpark was 35 cents. And America was coming to grips with the price of its prosperity—air pollution.

Back then, Michigan's air pollution problems were readily visible and, in some cases, smell-able. The Industrial Revolution provided us with a standard of living unequalled in history and provided Michigan citizens with thousands of well-paying jobs. But, by 1965, it had also provided Michigan with a "pollution rainbow"—a landscape marked by black smoke spewing from power plants, yellow iron oxide fumes from foundries, huge red clouds from steel manufacturing facilities, and white plumes from cement kilns.

That was Michigan then. But this is now, the 40th anniversary of air pollution control in Michigan, and a good time for a contemplative look back at the Wolverine State and its journey toward clean air. The rapid increase in manufacturing and technology and the accompanying pollution, prompted researchers and government officials to take a good look at air pollution. What are the consequences of air pollution? What steps did we take to halt the destruction of our air resource? How has air pollution control affected the lives of those who live here? And what can we expect for the future?

Who fouled our nests? We did. As far as anyone can tell, significant air pollution did not exist prior to the Industrial Revolution, which began in Europe in the

late 1700s. Although actual sources of air pollution are often difficult to pinpoint, fossil fuel combustion is probably the single largest contributor of foul air worldwide. The automobile, modern manufacturing methods, and our massive consumption of electricity all rely heavily on fossil fuels—oil, gasoline, and other petroleum products, and coal. The most serious effect of polluted air is the impact it has on human health. The average adult consumes 35 pounds of air each day.

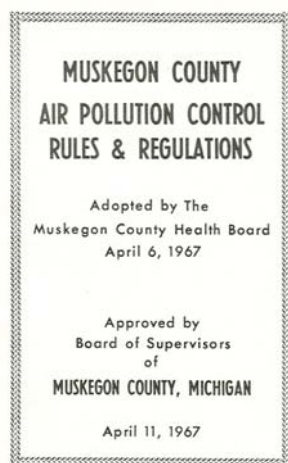
By the time the 1960s arrived, Michigan citizens recognized that it was time to take action. Wayne County, which encompasses the city of Detroit, had already adopted a local air pollution control ordinance in 1885. The State of Michigan Archives houses letters from citizens around the state asking for state regulation of air pollution. Surprisingly, a number of the letter-writers wrote to complain about air pollution in rural areas, expecting, perhaps, to escape that which city dwellers had begun to accept as inevitable. One disgruntled rural gentleman wrote Michigan Department of Public Health officials in 1964, protesting that dust from a nearby cement plant "coats grass for some distance from the plant and I have been informed that cattle eating the grass have been killed." He went on to observe, in what was perhaps an intentional understatement, "If it will kill a bull it surely wouldn't be healthy for humans."

It was also a common practice for junkyard owners in the city of Grand Rapids to dispose of unwanted debris (mainly old cars) by burning them, sending thick, black plumes of smoke into the air that soiled everything for miles around. The city asked the junkyard owners to refrain from burning on Mondays so that laundry would not return from the clothesline dirtier than before it was washed. But complaints continued. In 1965 the public outcry became organized. A group of citizens from Muskegon called "Citizens for Clean Air" demonstrated on the steps of the State Capitol in Lansing; some wore gas masks and waved petitions with thousands of names on them demanding that the Legislature take action.



The Michigan Legislature, recognizing the threat to our well being from air pollution, did act. On July 23, 1965, Governor Romney signed into law Act 348 of 1965, the Michigan Air Pollution Act. Passage of Act 348 established the Michigan Air Pollution Control Commission within the Department of Public Health. (It was transferred to the Department of Natural Resources in 1973 but was disbanded in 1995 when the Department of Environmental Quality was formed.) The law empowered the Commission to regulate air pollution in this State. Michigan was and continues to be a leader in air pollution control, considering that in 1965, Congress was still years away from requiring nationwide air pollution control.

The task at hand was formidable. With the legislation in place, the work of actually cleaning up the air surrounding Michigan's 83 counties could begin. Fortunately for all of us, the infant clean air program had a doting father, Bernard Bloomfield, who was not afraid of work. Bloomfield, former assistant chief of the Department of Public Health's Division of Occupational Health, had worked on air pollution control for several years before the Legislature passed Act 348. Now, with the legal framework in place, Bloomfield was given the responsibility of organizing the newly formed Commission and developing the rules under which the state would begin its quest for cleaner air. For one who had already worked so long with that objective in mind, his task was one of sheer joy.



Although industry in general was keeping a wary eye on the activities of the new Commission, there were some early notable examples of industrial cooperation in the clean air crusade. During the 1960s, Governor Romney encouraged Michigan residents to drive with their car headlights on during daylight hours to increase auto safety.

Muskegon residents needed no encouragement; there were days during the '60s when pollution reduced visibility to such an extent in Muskegon that residents used car headlights in broad daylight in order to see and be seen. In a good faith gesture, Consumers Energy Company announced plans in December of

1966 to invest \$3.3 million at its B. C. Cobb Power Plant in Muskegon for the installation of electrostatic precipitators to control pollutants emitted from its five electric generating units. Local officials were thrilled, and they had good reason to be. It is estimated that in 1966 some 600 tons of air pollution were pumped into Muskegon County's air *each day* from all sources.



The Air Commission adopted its first administrative rules regulating air pollution in 1967. The rules were not comprehensive by today's standards, but focused on pollution

that could be seen and addressed some of the worst offenses common at that time, such as open burning in junkyards, emissions from coal-burning equipment, incinerators, steel manufacturing facilities, foundries, cement plants and asphalt plants, and smokestack plume opacity.

Following the lead of Michigan and other states, Congress enacted the Clean Air Act of 1970, which provided for control of air pollutants commonly found throughout the U.S. that were believed to pose the greatest overall threat to air quality. Termed "criteria pollutants," they include ozone, carbon monoxide, particulates (small particles of airborne dust or debris), sulfur dioxide, nitrogen oxides, and lead. Each state was required to take up monitoring to determine levels of each of the criteria pollutants, and to submit plans to the newly formed United States Environmental Protection Agency (EPA) to control excessive levels. Major amendments to the Clean Air Act in 1990 addressed federal air permits, acid deposition, stratospheric ozone, air toxics, and a variety of other air pollution issues. Michigan developed its own air toxics program. The Department of Environmental Quality was created by an Executive Order in 1995, which transferred environmental regulatory programs from the Department of Natural Resources to the newly created MDEQ.

Once the administrative tools requiring all new sources of air pollution to get permits before operating were in hand, the Commission's staff began its work in earnest. Starting in 1967, only three people were responsible for all aspects of the

program. Now there are over 220 people and about 500 permits are issued each year.

In the early days, the entire staff was based in Lansing. Staff conducted air pollution investigative work that took days on the road and it involved being away from home for weeks at a time. In 1969, program managers decided to establish district offices around the state to alleviate the logistical problems.

When people think of “field work,” they may envision working outdoors in and on forests, lakes, and streams. Air pollution field work is much different. Field inspectors help prevent air pollution problems from occurring at all by performing site evaluations for potential new sources of air pollution, such as factories or power plants. They conduct inspections of sources of air pollution to ensure that the sources are complying with state and federal air pollution regulations. They climb up ladders and smokestacks and other places high enough to make the strongest stomachs turn over and the driest palms feel clammy. They walk long distances and are often exposed to dirty, and sometimes hazardous, conditions in order to complete an inspection. Hard hats, steel-toed shoes, safety glasses, and on certain occasions, facemasks comprise their uniforms.

How do those people actually measure whether or not an air pollution source is performing as it should? Field personnel follow up with the sources to ensure that they are properly using the pollution control equipment and doing all of the record-keeping required by their permits. Even in this technological, digital, computerized age, the most effective and widely used equipment air pollution inspectors have at their disposal are their own eyes and noses. Their eyes are trained to “read” a plume of smoke or a cloud of dust and evaluate whether it constitutes a violation of state or federal law; they attend “Smoke School” each year to become certified smoke “readers.” And, since odor complaints used to outnumber other air pollution complaints (they added up to 60% of all complaints in 1989), the inspector’s nose is an indispensable part of the air pollution program.

More objective means of detecting air pollution violators are available to the field staff. Basic equipment includes a compass (used in wind direction studies), thermometer (used to report ambient air temperature), and stopwatch (for timing done during

stack testing and smoke “reading.”) There is even more sophisticated equipment, such as meters to take air velocity readings and airflow measurements, and gauges to measure air pressure drops in pollution control devices. There are also several types of gas samplers, ranging from simple to very complex, for determining the presence of volatile organic compounds (VOCs), hydrogen sulfide (a deadly gas in very low concentrations), carbon monoxide, and sulfur dioxide.



Behind the scenes in downtown Lansing, MDEQ staff work to improve Michigan’s air quality. Their activities include maintaining the air pollution monitoring sensors around the state, recording and interpreting the data collected by those monitors, reviewing air pollution permit applications, keeping track of emission allowances or credits, working with the EPA on rules to reduce Michigan’s air pollution even further, convincing polluters to abide by state and federal clean air requirements, and, when necessary, taking polluters into court. Since 1968, the Air Quality Division has issued thousands of installation permits to regulate air pollution from new sources. Large sources now have federal operating permits. Based on the most recent data, MDEQ permit engineers can calculate pollution emission limits for new sources, so that those new sources will not significantly affect the quality of Michigan’s air.

As we’ve noted, Michigan’s initial efforts at controlling air pollution were sometimes greeted with skepticism. The cost of controlling air pollution would make a significant dent in someone’s wallet. Who actually pays the bill for the controls that provide us with cleaner air? We all do, through higher prices. Before the 1990 Clean Air Act, the U.S. EPA estimated that motor vehicle pollution control equipment adds \$600 to \$800 to the cost of a new car. A power



company estimated the increased cost of electricity to the average residential customer to be 47 cents per kilowatt hour, or more than \$55 million per year overall, due to air pollution control requirements. And like any astute consumer, Michigan residents should be asking, Are we getting our money's worth?

Consider these facts:

Lead: All areas of the state have been in compliance with federal air quality standards for the amount of lead detected in the air since 1978, the year standards were adopted.

Sulfur Dioxide: In 1971, 23% of Michigan's population lived in areas that did not meet federal air quality standards for sulfur dioxide in the air. However, since 1977, all areas of the state have been in compliance with those standards.

Carbon Monoxide: In 1971, 48% of Michigan's population lived in areas that did not meet federal air quality standards for carbon monoxide in the air. All areas of the state are now in compliance.

Nitrogen Oxides: All areas of the state have been in compliance with federal air quality standards for nitrogen dioxide in the air since standards for that pollutant were adopted in 1971.

Air Toxics: Many companies have dramatically reduced their emissions of air toxics.

Acid Rain: The rainfall in Michigan has become less acidic.



But there is work yet to be done. Ground-level ozone and particulate federal standards were tightened in the late 1990s and areas of the state do not meet the newer, more stringent requirements. Although Michigan is in compliance for coarse particle matter (PM_{10}), the Detroit region has been designated out of compliance (nonattainment) in December 2004 for fine particles ($PM_{2.5}$). Much of Michigan's Lower Peninsula was designated as nonattainment for the eight-hour ozone standard in 2004.

New federal regulations require caps on mercury and NO_x emissions from electricity generating units. Other new regulations address visibility in areas like Seney National Wildlife Refuge and Isle Royale in the Upper Peninsula. Michigan determined long ago that climate change issues were best handled at the federal level.

We have made great strides forward in controlling air pollution, but Michigan's air is not yet as clean as it should be. We must value our air and do what we can to address air quality issues individually and collectively.

Name _____



Winds of Change Questions:

1. Describe what the air was like in some places in Michigan in 1965.
2. When and where did the first significant pollution in the world begin?
3. What is the single largest contributor to air pollution worldwide? Give examples of sources.
4. Which is the first Michigan county to adopt air pollution ordinances and where is it located?
5. What helped to bring air pollution to the attention of lawmakers?
6. When were the first air pollution rules adopted for the State of Michigan?
7. How do air pollution inspectors determine whether or not a pollution source is abiding by its permit?
8. Have Michigan's efforts to clean up the air produced results? Explain your answer.